MADRAS

The Journal of The Madras Geographical Association

Vol. 12 | December, 1937 | No. 4

Conjeevaram : A Temple Town

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The town of Conjeevaram is famous for three outstanding features. It is one of the seven sacred towns of India,[1] and is unique among them in being sacred to Saivites and Vaishnavites alike. Prithivi Lingam representing earth, among the five "Boothams" (elements of the Universe),[2] is enshrined in the Ekambareswarar temple in the town. Sri Sankara, one of the three great exponents of Hindu Philosophy established one of his five Peetams or seats of learning here[3] .

Several explanations are given of the name of the town.

(1) A verse in the Brahmapurana[4] states that this was the place where Lord Brahma worshipped Lord Vishnu and hence the name of Kanchi.

1. अयोध्या मथुरा माया काशी काञ्ची अवन्तिका ।
पुरी द्वारवती चैव सप्तैते मोक्षदायकाः ॥

and also the Tamil saying : " முக்திதரும் நகரேழுள் முக்கியமாம் கச்சி

2. The other four places are : (1) Tiruvanakkaval—Ap. (Water), Tiruvannamalai—Agni (Fire), (3) Kalahasti—Vayu (Wind) and (4) Chidambaram—Akasa (Ether).

3. The other Peetams of Sri Sankara are (1) Sringeri, (2) Puri, (3) Dwaraka and (4) Karvir (Kolhapur).

4. क इति ब्रह्मणो नाम तेन तत्रार्चितो हरिः ।
तस्मात् काञ्चीति विख्याता पुरी पुण्यविवर्धिनी ॥

.nother explanation is that, once upon a time, the town .ed like gold and hence the name of Kanchanapuram, which as subsequently changed into Kanchipuram.

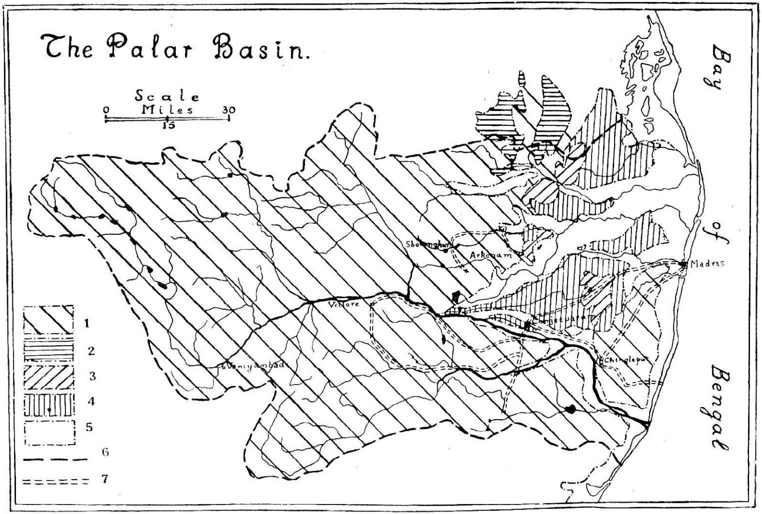
(3) The area was once covered with trees of a particular species called காஞ்சி (Kanji) ; and hence when the settlement was made there, it was called Kanjivanam which subsequently became Kanchipuram. Analogous to this is the name of Madura as Kadambavanam and Chidambaram as Tillaivanam, because of those two species of trees being found in the vicinity.

SITUATION

Conjeevaram is situated in 12°50′ N. Latitude and 79°45′ E. Longitude, to the north of the Palar, and 45 miles west-south-west of Madras. It is the headquarters of the taluk of the same name in the Chingleput district and is a station on the branch line of the S. I. R. connecting Arkonam and Chingleput.

The Palar basin in which Conjeevaram is situated, has been important from ancient times. The regions to its north and south were not so well endowed with water supplies as this region was, and the development of agriculture was more favoured here. There is ample evidence to show that the Palar had a much larger flow in the past. Large quantities of water are impounded in tanks all over its basin and used for irrigating much of the cultivated areas. The longstanding dispute over the distribution of water supplies in this area between the Madras and the Mysore Governments show that some of these tanks are of recent construction. Among them, the Betamangalam tank, one of the largest in Kolar district, is now specially used to store and provide the urban water-supply for the mines area (Gold Fields Settlement). It has also been stated that the water supply in the Palar basin has decreased in recent times, and that the level of water in wells in parts of North Arcot district is lower than it used to be.

In early times, when people solely depended upon agriculture, settlements arose wherever cultivation was possible, and probably Conjeevaram came into existence in this way. The valley of the Palar offers an easy highway through this region and this would have given additional importance to the site of the town during its growth. A number of towns were fortified, to form a ring of forts round Conjeevaram, e.g. Vellore, Arni, Sholinghur, Chittoor, Gingee etc. If a circle is drawn connecting all these places, we find that Conjeevaram occupies a central position. The importance



1. **THE PALAR BASIN.** 1=Peninsular gneiss; 2=Cuddapahs; 3=Upper Gondwanas (Jurassic); 4=Older alluvium and laterite; 5=Recent deposits; 6=Limit of river-basin; 7=Regular bus-routes.

..evaram and the need to defend it probably led to such an ..ngement.

Conjeevaram is situated on the alluvial plain of the Palar river. There is a natural slope from west to east with a fall of 42 feet. As a result of this the drainage is made easier, the rain water draining itself into the Vegavathi river, to the south of the town.

Throughout the year Conjeevaram is hot; and especially the months from April to August are hotter than the rest. The mean temperature varies in these months from 85°F. to 95°F.; and in the remaining months the mean temperature varies from 70°F. to 80°F. Even though the temperature is high, yet the place is not bad for habitation because it is not moist but dry. The distribution of rain-fall in the year is shown below:—

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
.93"	.41"	.25"	.55"	1.99"	2.62"	4.35"	5.82"	5.97"	7.61"	9.10"	3.30"	43.3"

The average rainfall of the place is about 45". This town has the benefit of both the South-West and the North-East monsoons, but the precipitation during the north-east monsoon is very much greater than the other, the total amount falling in the months of September to December being about 27" or more than 55% of the total rain during the year.

HISTORY

Little is known regarding the origin of Conjeevaram. It was already an important place during the early Pallava period, and is particularly mentioned by Fa Hian (425 A.D.) the Chinese travel-lor and also by Varahamihira the North Indian Astronomer (5th or 6th century A.D.). The Kailasanathar temple was built by Rajasimha Pallava (567 A.D.). The early Pallava period lasted up to the end of the 7th century; and before that time Conjeevaram was visited by Hieun Tsang (640 A.D.) who described it as a great Buddhist centre noted for many Buddhist shrines. He also specially noted its renown as a centre of learning and said that there were many "Sangaramas" (Buddhist religious societies). The Manimegalai also describes Conjeevaram as a Buddhist centre and bears testimony to much of what Hieun Tsang had said. The Saivite saints Sambandar and Appar also visited Conjeevaram during the early Pallava period; and the decline of Buddhism and Jainism at Conjeevaram may be said to begin about

this time, since we know well, that such a decline was associated with the activities and influence of these Saivite saints all over South India. The Sunga Pallava period followed that of the early Pallavas and lasted till the end of the 9th century or the beginning of the 10th century. The Vaikunta Perumal temple was built by Parameswaravarman at the beginning of the 8th century. A second revival of Hinduism took place towards the last quarter of this century as a result of the work of Sri Sankaracharya.

The Rashtrakutas succeeded the Pallavas during the beginning of the 10th century; Conjeevaram was conquered by one of them, Krishna III, and remained under the Rashtrakutas between 945 and 970 A.D. After the latter date the town was ruled by the Cholas, beginning with Rararaja I who changed the name of Tondaimandalam to Jayankonda Cholamandalam. The Cholas were succeeded by the Eastern Chalukyas, whose king Rajendra II seized the Chola country and made Kanchi his capital, at the same time changing his own name to Kullotunga I (1073-1102). The Kalinga campaign celebrated by the poet Jayankondan occurred in his reign. The rule of the Chalukyas lasted till the end of the 12th century when the Cholas are again found ruling over Conjeevaram. They were not apparently as well established as in the earlier period, for we find a local chieftain Perunjunga, repeatedly setting himself up as independent king of Kanchi in 1230 and again in 1242 A.D., when he succeeded in maintaining himself as such for 20 years. The town next passed into the hands of the Kakatiyas and later of the Pandyas. In the beginning of the 14th century the Sambuvarayas who were vassals of the Cholas established themselves as independent kings at Kanchi and remained so till about 1367 A.D., when the town passed into the hands of the Vijayanagar rulers.

Conjeevaram was under the rule of the Vijayanagar kings till the beginning of the 17th century and was governed by their Viceroys who made the town their headquarters, and naturally devoted much attention to the improvement of the town itself. One of them known as Gundu Gopal Rao is credited with excavating a channel which diverted the Palar from its old course. Another, a Lingappa, who is no doubt the 'Lingappa Brahminy' Collector of the king's rents at Conjeevaram who gave the factory of Fort St. George so much trouble, is still remembered for his many good works. He constructed streets and wells for Brahmins and erected five minor Siva temples. One of the streets in Big Conjeevaram still bears his name. Sittakoni Rao, alias Babu Sahib was another

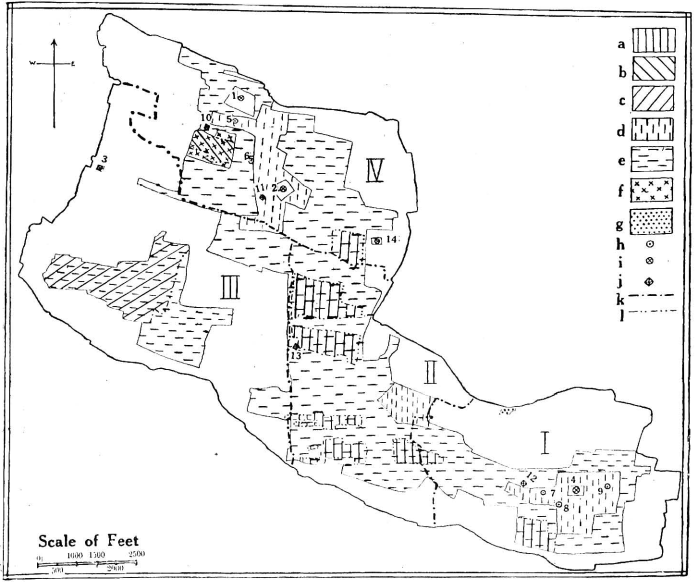
Viceroy who initiated the Rajakkal water-supply project. The water was brought to the Sarvatheertham tank by a channel two or three miles in length from a spring in the river bed near the village of Ambil. In the south-western suburb of the town the channel divided to supply two-fifths of the water to the irrigation tank of the village of Konerikuppam and the rest was distributed by a series of underground passages to various tanks in the town. This project was begun before 1723 A.D. The Kamakoti Peeta or Mutt of Sri Sankaracharya was situated in Kanchi till 1686. It was located during the earlier periods of history in Vishnu Kanchi to the west of the Varadarajaswami temple and later in a new Mutt in Siva Kanchi. At the invitation of Pratapasimha Raja of Tanjore the mutt was first transferred to Tanjore; and later, to Kumbakonam in 1821 when Sarfoji Raja of Tanjore constructed the present Mutt at Kumbakonam.

After the downfall of the Vijayanagar dynasty the town was captured by Hyder Ali of Mysore. He did not hold it long but had to give it up to the English. During the short period when the town was under Hyder and his son Tippu the idols and the jewels in the temples at Conjeevaram were removed to Tanjore for safe custody. In the wars of the English against Hyder and Tippu and later against the French the Ekambarareswarar and Varadarajaswami temples were used as forts, and we can still see the damage to the buildings and sculpture caused by the cannon.

Clive marched through Conjeevaram in 1751 on his way to Arcot, and dislodged the French and Raja Sahib from the town in 1752 when they attempted to garrison and hold it against the English. This was again repeated two years later. The town was sacked and set fire to by the French in 1757. After this for some years Conjeevaram was made the principal cantonment for English troops in South India. Conjeevaram was again sacked and burnt by Lally in 1760. Towards the end of the 18th century the town finally came into the possession of the English. It was connected by a railway in 1865 when the Arkonam—Conjeevaram branch line was constructed. In 1866 the town was constituted a municipality.

POPULATION

The municipality of Conjeevaram comprises an irregularly shaped area about 2½ miles long, from west to east, and varying in width in different parts. The town is broadest in the western portion and has a width there of about 1¼ miles: it is narrow in



II. CONJEEVARAM: COMMUNITIES AND OCCUPATIONS. a=Silk weaving; b=Lungi weaving; c=Cotton weaving; d=Brahmins; e=Non-brahmins; f=Mahomedans; g=Depressed classes; h=matams; i=Temples; j=Choultries; k=Ward boundaries; l=Limits of weavers' localities. Ward numbers shown in Roman figures. The important matams, temples and choultries have been shown by symbols, and their names are shown in the following list, against the corresponding numbers.

1=Ekambaresvarar temple; 2=Kamakshiamman temple; 3=Kailasanatha temple; 4=Varadaraja Perumal temple; 5=Sankarachari matam; 6=Sringeri matam; 7=Uttaradhi (Madhwa) matam; 8=Uttaradhi (Vaishnavite) matam; 9=Vyasarayar matam; 10=Ganga Bai's choultry; 11=Golla choultry; 12=Arni Jaghirdar's choulty; 13=Pachaiyappa Mudaliar's choultry; 14=Vaikunta Perumal temple.

the middle, where the width is less than 5 furlongs, and widens out to 5 furlongs in the eastern portion. The town is divided into 4 wards. More than half the total area of the town is waste land and gardens, and less than half occupied by buildings and roads.

The population of Conjeevaram in 1931 was 65,258. It has nearly doubled since 1872, when the first census was taken. The town has steadily grown in numbers since then, as shown by the following table :

1872	37,327	
1881	37,275	
1891	42,548	
1901	46,164	
1911	53,864	
1921	61,376	
1931	65,258	(Males 32,367) (Females 32,891)

Conjeevaram is one of the densely peopled towns of South India. Some portions of the town are more densely populated than others. The two areas surrounding the two important temples of Ekambareswarar and Varadarajaperumal, are the most densely peopled areas. Next to them come the areas where weavers live. The least dense areas are the bazaars.

The people are divided into several groups according to their religion and caste, shown by the following table, based on the census of 1931 :—

TABLE I

Distribution of Population according to communities and density in each of the Wards.

	Ward I.	Ward II.	Ward III.	Ward IV	Total for the town.
Total population ..	16,194	16,554	14,087	18,423	65,258
Brahmins ..	2,290	336	616	2,212	5,454
Non-Brahmins ..	13,469	15,686	12,955	14,011	56,121
Depressed classes ..	326	14	72	5	417
Muhammadans ..	77	234	362	2,167	2,840
Others ..	32	284	82	28	426
Density for the whole area ..	46	52	24	53	41
Density for the built area ..	107	69	95	96	89

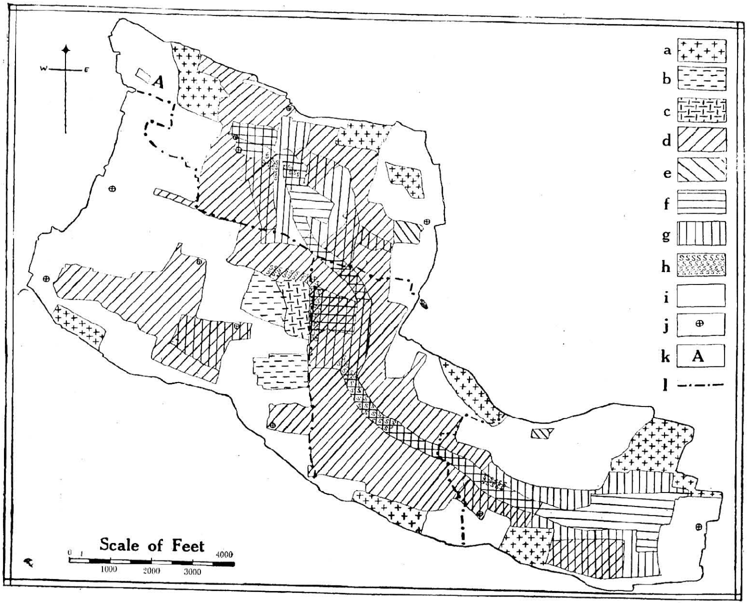
Hindus :—

Brahmins	5,454	
Non-Brahmins	56,121	
Depressed Classes	417	
		61,992
Muhammadans		2,840
Christians		286
Others		140
	Total	65,258

The Brahmins form about 9% of the total population, whereas they are only 2% of the total population of the Presidency. This is because Conjeevaram abounds in temples and to conduct the worship or pujas a large number of Brahmins are required. They live mostly in the vicinity of the temples or *matams,* as seen on the map showing the *matams* and temples and the distribution of communities. The Brahmins occupy an important position in the town, many of them being Government servants, teachers and lawyers. Many of them are priests in the temples. Several retired Government officials have also become permanent residents of Conjeevaram, because it provides them with many of the advantages of town life at a small cost, and also because it is nearer to Madras than any other town of similar size. Nearly 90% of the Brahmins are literates ; and most of them are middle class people.

The Non-Brahmins form the bulk of the population i.e., nearly 85%. There are a number of sub-castes ; and the most important among them are the Vanniyars, Sengundars, Saliers etc. They are scattered all over the town but are chiefly found in the weaving and dyeing areas. They form the bulk of the weavers. Only about 25 to 30 per cent of them are literates. Some of them are rich ; but most of them are very poor, and lead a hand-to-mouth existence. The Sourashtras who form a class by themselves number about 2,000. They are mostly rich middle class people. They do not weave but only dye the silk yarn, the weaving being done by the Saliers and others.

The depressed classes who live on the outskirts of the town are very few in numbers and are mostly illiterate, the bulk of them being scavengers. A number of these people also live outside the town limits.



III. CONJEEVARAM: LAND UTILISATION AND HOUSE TYPES. a=Market gardens; b=Playgrounds; c=Public buildings; d=Brick and mud tiled houses; e=Thatched huts; f=Brick and mortar terraced buildings; g=Brick and mortar tiled buildings; h=Shops; i=Open spaces (paddy fields, tanks); j=Rice Mills; k=Skin depot; l=Ward boundary.

The Muhammadans who form less then 5 per cent of the total population are mostly weavers. A few of them have become rich through trading in Kailies. The bulk of the Muslim population however is poor and illiterate. They live mostly in the area called Valimuhammudpet.

The Christians and others who form a very minor percentage are not confined to any particular area.

The social and economic status of the several communities are reflected by the different types of houses which they tend to occupy, as much as by the different localities of the town where they are found. There were 9574 houses in the town in 1931, and they can be divided broadly into the following classes :—(a) Thatched huts (b) Brick-and-mud tiled buildings (c) Brick-and-mortar tiled buildings (d) Brick-and-mortar terraced buildings. The thatched huts are found on the ouskirts of the town and are inhabited by the depressed classes. They number about 200.

The Brick-and-mud tiled buildings number more than 5,000 and are mostly inhabited by Non-Brahmins and Muslims. Many of the weavers live in such houses, which are planned so as to have a long courtyard in which the warping and other processes can be carried out, before the yarn is transferred to the looms.

Brick-and-mortar tiled buildings may number more than 2,000 but less than 3,000. They are mostly inhabited by the poorer middle class men. Most of the Brahmins and some of the merchants live in houses of this sort. Some of the Muhammadan houses are also of this type ; but the difference between the Hindu and the Muhammadan houses is that, while the former are open to the view of the man in the street, the latter are not, because of their observance of Purdah. The houses of the Hindus have big centrally placed windows, whereas the houses of the Muhammadans have small and highly placed windows.

Brick-and-mortar terraced buildings are found in the main bazaar and along the main streets such as the Rajah street. Their total number may not exceed 1,000. They are generally owned by wealthy middle class merchants, landlords and vakils. They are mostly old-fashioned houses, the ground floor being ill-ventilated and dark, and the first floor more open and airy. Most of these houses are built well above the ground level, their basements generally being 4 to 5 feet above the street level.

OCCUPATIONS

The chief occupations of the people are weaving, dyeing, preparing boiled rice, oil-pressing, trade in grain, etc. The foremost industry of the town is weaving of both silk and cotton; and next to this comes the dyeing industry.

Silk weaving:—Raw silk is obtained mainly from three centres: (1) from Siddalagatta and Kampanahalli in Mysore State, (2) from Malda in Bengal, and (3) China silk from Bombay. Of the three, the Chinese silk is the best and costliest, the silk obtained from Mysore State is very nearly of the same quality and the Bengal silk is the cheapest.

The value of finished silk goods that are sent from this place exceeds Rs. 30,00,000 annually. The two important places to which goods are sent are Madras and Bombay. There are other minor centres such as Madura, Tanjore, Trichy, Vellore etc., in the south and Nellore, Coconada, Vizagapatam etc., in the north. Sarees to the extent of Rs. 20,000 are sent to Calcutta annually. There are a number of shops in Conjeevaram which have their head offices in Madras, and the local branches give orders to the weavers and personally supervise the work.

There are at present not less than 5,000 looms working in Conjeevaram and these can be sub-divided into eight groups.

1.	Sheikpet and Reddipet	750	looms
2.	Ashtabujam group	1,000	"
3.	Punyakotiswarer Group	500	"
4.	Vellakadai Koil street group	500	"
5.	Singaperumal group	1,000	"
6.	Salai street and Vaikuntaperumal street	250	"
7.	Oil-man street group	500	"
8.	The rest scattered in about 8 streets	500	"

Throw shuttles only are used in this industry. They use the "Dhobie" for weaving the lace border into the sarees. The Kora or raw silk is first dyed. The dyeing is mostly done by the sowcars who are mostly Sourashtras. The dyes are mixed and the raw silk is then soaked in this mixture and allowed to dry for about 12 hours in the shade. This is repeated two or three times until the required shades are obtained. Then the dyed yarn is twisted on multi-spindle wheels. There are about 2,000 multi-spindle wheels working and this twisting is mostly done by women. Sometimes two threads are twisted together and sometimes three or more,

depending upon the quality of the cloth required; the lesser the number of threads twisted the finer the cloth is. There are usually 80 ends per inch and 80 picks per inch. For warp they generally use 3 to 4 silk threads well twisted; but for weft they use 5 to 6 silk threads of inferior quality twisted. The threads are next arranged, on a peg-board, according to the design required and rolled up after final adjustment. This roll is connected to the throw shuttle and the cloth is woven. For lace borders separate arrangements are made and this is called the "Dhobie." More than 60 per cent of the looms have this as a permanent fixture, because they manufacture only lace-bordered sarees.

The finished goods manufactured here include both plain and checked Sarees, Pavadais, Dhavanies, Malukus and white silk dhoties. The sarees, well-known as Kanchi Podavais are distinguishable by their lengthwise and breadthwise stripes and solid borders. They are famous for their fast colours and are very popular in the Tamil districts. There is no standard warp length; but generally the lengths are 14, 16, and 18 cubits—Dhavanies and Malukus generally having 14 cubits, Dhoties and Pavadais 16 cubits and sarees both 16 and 18 cubits, but more of the latter. Some weavers are now having 12 cubits as the warp length since 12 cubits sarees have become the fashion.

The following is an estimate of the cost of a silk saree without lace border, 18 cubits in length and 40 inches in width.

	Rs.	A.	P.
Cost of warp silk thread Bangalore quality weighing 12 palams	5	9	0
Cost of weft	5	1	0
Cost of dyeing (12+12 palams)	1	0	0
Cost of cleaning and sizing	0	8	0
Winding of warp yarn at 6 ps. per palam	0	12	0
Coolie for a boy assistant @ 2½ as. a day	1	9	0
Making warp	1	0	0
Wages for the weaver at 8 as a day	5	0	0
Total	20	7	0

The sale price of this cloth is about Rs. 30. For lace sarees the cost of the saree depends on the amount of lace they use, the nature of the border and the nature of the cloth i.e., either plain or checked.

There are about 15,000 people engaged in this industry and nearly a third of them are women. They generally work for about 7 to 8 hours a day. For about 60 days in a year they do not work. About 98% of the weavers are not independent but work for sowcars who give the weavers yarn and take back from them the finished goods, paying them their wages. The weaver generally employs a boy to assist him when he is working on a lace-bordered saree.

Cotton weaving :—The raw materials required for this industry are cotton yarn and silk yarn for the borders. These are obtained from the Madras market. The value of the finished cotton goods sent from this place exceeds Rs. 10,00,000 per year. Merchants from Nellore, Guntur, Madras, Vellore etc., come here and buy the goods from the local merchants.

There are about 1,750 looms working in this industry, mostly in Pillaipalayam. Unlike the silk weaving, the cotton weavers use mostly fly-shuttles. More than 1,500 are fly-shuttles and only 100 to 150 looms are throw-shuttle looms. Another difference between the cotton and silk weavers is that whereas the silk yarn supplied is dyed by the sowcars, the cotton weavers dye the yarn themselves. The dyeing is mostly done by the women, using local dyes. The yarn is allowed to soak in the solution of the dye for about 10 to 12 hours and then the yarn is first sized, mostly by women and children. After sizing, the yarn is warped. There are only 5 warping mills ; and so only a small part of the warping is done by the mills, the rest being done by peg-warping and street-warping. Both men and women are employed, the women in peg-warping and men in street-warping. Then the cloth is woven in the looms with the necessary borders.

Both bleached and unbleached cloths are manufactured here, 60 per cent being unbleached. Both cotton and silk borders are used. Cloths 5 and 6 cubits in length and 2½ cubits in breadth are manufactured here. For 70 per cent of the goods 40 counts yarn is used and for the rest 60-40 counts yarn is used. Finer counts than these are not used.

Between 4,000 to 5,000 people are employed in this industry, nearly 2,000 being women and children. They are mostly Sengunda Mudaliars by caste and most of them are independent workers, unlike the silk weavers. The weavers generally work for about 9 hours a day and they do not work for 45 days in a year. The

average earning for a man is about 8 as. a day and for a woman 4 as. a day and for children 2 as. The maximum amount of cloth that a weaver can produce is about 8 cubits a day.

The Madras Hand-Loom Weavers' Provincial Co-operative Society, whose object is to improve the hand-loom weaving industry, has a branch here. The poor weaver is supplied yarn on credit and after the cloth has been woven they try to find a market for it also. Out of the sale price he clears off his debt to the society and earns his profits. But for this Society most of the weavers would have been ruined.

Lungis and Kailies:—Foreign dyed yarn is mostly used for making these, and the dyed yarn is stocked by local merchants who sell it to weavers. Only 40 and 60 counts yarns are used for this purpose. The dyed yarn is warped either in the mills or by peg-warping, and then woven into various designs in the fly-shuttle looms.

There are about 1,000 fly-shuttle looms and few warping mills. The weavers in this industry are mostly Muhammadans; and this industry is solely confined to a part of Conjeevaram called Vali-muhammadpet. More than 1,000 families live by this industry, the total number of weavers amounting to more than 3,000 people. Like the other cotton weavers these are also independent weavers. They work for about nine hours a day and do not work for about 60 days in a year. The general measurements of the cloth are 9 cubits in length and 30 inches in width. The average income obtained by a weaver is about 8 as. a day.

Dyeing is mainly concentrated in the first two wards, because of the large open areas available for drying. Silk dyeing is mostly done by sowcars and for this both local and foreign dyes are used. The process of dyeing has already been described under cotton-weaving. More than 2,000 people are employed in this industry. For dyeing Araku or Shellac colour which is the really fast colour, Kiraimanji or Cochineal seeds are purchased locally at the rate of Rs. 4 per pound from shop-keepers who import them from Bombay. For dyeing yellow, Kavila powder is purchased at Rs. 2 a viss. Other colours are dyed with German indanthrine dyes got from Madras. Sulphur colours are not used.

Rice-milling forms one of the minor industries. Large quantities of paddy come from the surrounding villages and are milled and

sold in Conjeevaram. The value of paddy milled totals more than Rs. 30,00,000 per year. Part of the paddy is boiled and milled, and sold as 'boiled rice.' The mills in wards III and IV produce 'boiled rice' mostly.

Oil milling also forms an important minor industry of the town, groundnut oil and gingelly oil being produced. Most of the oil is sold to outside merchants.

More than Rs. 50,000 worth of skins and hides are sent to Madras from this place. They are mostly sent by lorries now, only a small portion going by rail. The existence of large open spaces in Ward No. IV is the chief reason for the location of the skin depots there.

Brass work:—There are nine family groups of workers in Conjeevaram of whom five belong to Vaniars, two Cannars, one Sembadian and one Setty. They are all whole-time workers having no other occupations. They work for wages in the local brass-vessel shops which supply them brass sheet. For a *padi* of 12¾ seers, the wages are 13 as. for an '*adukupatra*' and Rs. 1-2-0 for a '*tavalapanai*.' A workman can normally make in one day one padi of adukupatra or one tavalapanai weighing 10 seers. The average daily earning of a workman is about 10 to 14 as. a day. Brass working is gradually increasing in Conjeevaram.

Painted Dolls and Toys:—Painted dolls and toys and models of fruits, birds, beasts and epic personages, are made of clay by one family of Telugu potters in Conjeevaram. The dolls are first cast in moulds of Karpur Silajit, and then burnt and painted with water colours and varnished. Articles worth about Rs. 20 are made by a workman in a month.

Toy vahanams etc.:—The making of *vahanams* and toys in wood has been the hereditary profession of three families of Telugu Kshatriyas here. While the men do the wood-work, the women assist them in joining the parts and modelling the figures in saw-dust mixed with glue, and in making smaller toys. The wood used is 'Maramalli' (Millingtonia hortensis) which is locally procurable. The required paints are purchased in the market. A set of 13 small vahanams costing Rs. 23 is made in one month by a man and his wife, the material costing Rs. 5. The woman makes other toys and on an average they earn about Re. 1 per day. Small vahanams and other figures are made to order. Big vahanams for temples are also made by these workmen, but the orders are few.

TRADE AND TRANSPORT

Conjeevaram is a station on the branch line of the S. I. Ry. connecting Arkonam and Chingleput. It is also connected with all the important surrounding towns by good metalled roads. Formerly the transport of goods to other places was always by rail and to a small extent by bullock carts, but with the advent of lorries a good portion of the goods that was being sent by rail is now sent by lorries; and therefore it is not possible to give the value of goods that are being either sent from or sent to this town. Numerous buses ply regularly between this town and other important centres such as Madras, Vellore, Wandiwash etc. During festivals the number of people that come into Conjeevaram is very large, and about 10 to 15 per cent of them come by bus.

TABLE II

Number of Railway passengers who came to Conjeevaram in each month during 1935.

January.	February.	March.	April.	May.	June.
9,156.	11,211.	11,984.	19,038.	13,486.	81,196.
July.	August.	September.	October.	November.	December.
14,192.	14,086.	13,624.	12,319.	19,011.	19,676.
				Total for the year:	246,979

This town has been a grain market from olden times. All kinds of articles are brought to Conjeevaram for sale, paddy, ground nut, castor, sesame and pulses being important.

Paddy comes into the market either as paddy or rice to a total value of approximately more than Rs. 40 lakhs. Some of it comes by rail, some by bus and the remainder by bullock carts, the proportion being roughly 5:2:1. Rice is sent by rail to Madras, Chingleput, Villupuram etc., and by lorry to Vellore, Madras, Arni etc., and by bullock carts to the small villages surrounding Conjeevaram.

Groundnuts are largely grown in the neighbouring areas. It comes into the market in the early part of December, mainly in bullock carts, to the average value of over Rs. 15 lakhs. This is the only commodity which is sent always by rail, going to the ports of Madras and Pondicherry. Castor, sesame and pulses are not so important because their sales do not exceed more than Rs. 5 lakhs a year. But gingelly oil is sent to other places such as Madras and Vellore, by rail, by bus or by bullock carts.

As already mentioned, raw silk yarn is obtained from Mysore State, Calcutta and Bombay to the total value of nearly Rs. 18 lakhs. Cotton yarn is obtained from Madras and its approximate value is Rs. 6 lakhs. Kerosene and Petrol are obtained from Madras by rail. After the introduction of Electric lights in the town the amount of kerosene consumed has fallen by about 40% ; but the increase in the number of cars has increased the consumption of petrol by about 10%.

The list of commodities other than silk and cotton goods and the places from which they arrive and are sent to, clearly show that Conjeevaram is the collecting and distributing centre for the lower Palar basin.

TEMPLES AND FESTIVALS

Conjeevaram abounds in temples. At every nook and corner there is a temple with a history behind it. In Big Conjeevaram it is said that there are a thousand and eight lingams which are the symbols of God Siva, and in Little Conjeevaram a thousand and eight saligrams or symbols of Vishnu. The number of temples in Conjeevaram in which puja is done daily is 158.

The first and foremost temple of this town is the 'Ekambareswarar' temple. This temple is not the work of any single king, but every king has added something to the original structure. It was begun by the Pallava kings and finished by the Cholas. The legendary origin of the temple is as follows :—Parvathi the spouse of Lord Siva once playfully closed his eyes with her hands ; and as a consequence the whole world was encircled in darkness. To atone for the sin, Parvathi is said to have done penance at Conjeevaram, having made a lingam out of sand. Hence the Lingam is also called Prithivi Lingam.

The next in importance is the Varadarajaperumal temple, which is a Vaishnavite temple. It was built by the Vijayanagar rulers, and their Viceroys. Its origin is as follows :—The Goddess Saraswathi questioned her Lord Brahma as to whom among the three Goddesses he liked most, to which Lord Brahma answered that he preferred 'Lakshmi.' Saraswathi got enraged at his reply and cursed him, and to escape from her curse, Brahma performed a penance at this place, as the belief was that the fruits of any act done here were a thousand times greater than when done elsewhere.

Another important temple is that of 'Kamakshi', the spouse of Lord Siva. From the architectural point of view this is the oldest.

It was originally a Buddhist temple under the name of pragna-paramitha; but later on it was converted to its present use. We can still see many Buddhist carvings in the materials used for the building, and there are also many idols of Buddha lying about the temple. When Hyder and Tippu invaded Conjeevaram the golden idol was removed to Tanjore for safety and it is there still. The other temples are not so very important.

Buddhism was predominant during the early period, but has left no traces from which we can reconstruct the history of the place. There are a few idols of Buddha in and around Conjeevaram and the sculpture of all these indicate their ancient origin. There are other references to its having been an important Buddhist centre. To the Nalanda University, which was perhaps the largest and best of the Buddhist Universities, four great learned men, named Dharmapala, Dignaga, Buddhamitra and Buddhakirthi, had gone from Conjeevaram and this shows the importance of the town not only as a Buddhist centre but also as a very great centre of learning. But Buddhism began to decline and gave place to Jainism, and in due course of time Buddhism was completely replaced by Jainism. Jainism flourished in the early period of the Pallava rule. But even Jainism began to decline, but was not completely wiped out as in the former case, but left traces in its temples and people belonging to the sect scattered around Conjeevaram. The decline was mainly due to two reasons: (1) the great interest in Hinduism taken by the Pallava kings who built a great number of Hindu temples and thus aroused more interest in Hinduism (2) the appearance of the various Saivite and Vaishnavite saints such as Tirugnanasambandar, Tirunavukkarasu etc. on the Saivite side, and on the Vaishnavite side many Alwars who preached Hinduism and converted the people to Hinduism. Their compositions such as the 'Tevaram' 'Nalayiraprabandam' etc., stimulated the people's interest in Hinduism and this brought about the slow but steady and sure decline of Jainism in Conjeevaram. After these people, the famous Saivite religious teacher Sri Sankara came, and gave a death-blow to Jainism, by making this town one of the five peetams or centres.

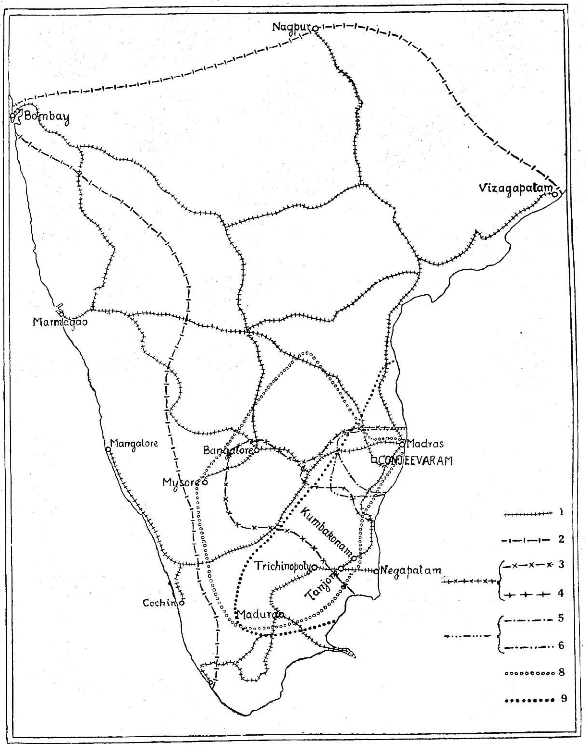
Conjeevaram is important as a religious centre not only because of its famous temples but also because it is the seat of the Matathipathis or heads of various sects of Hindus. There are 28 matams in Conjeevaram, amongst which the following are the most important.

Sankarachari Matam :—This was founded by Adi Sankaracharya. The reason given for founding this Peetam is as follows: The Goddess Kamakshi once used to roam about the streets of Conjeevaram during nights and devour human beings and cattle; and therefore people would not stir out of their houses at night. When Sri Sankara heard of this, he put a stop to this night-wandering of the Goddess by making penance and through its influence curbing the Goddess and thus effectively stopping her escapades. We still find the idol of Sri Sankara at the entrance of the temple and during festivals the Goddess has to stop and take permission from him before going out in procession. Thus it is said he established his peetam here. The more probable reason was that it was the stronghold of the Jains; and he wanted to drive out the Jains from South India; and by establishing his peetam in Conjeevaram, their stronghold, he could effectively fight them. Later, his followers shifted the matam to Kumbakonam because of the easy accessibility of Conjeevaram to the Muhammadans. A number of pupils are taught the Vedas and other mantrams.

The Uttaradhi Matam :—There are two matams by this name one belonging to the Vaishnavites and the other belonging to Madhwas. Both of these are in Little Conjeevaram. They feed and give tuition to more than 20 pupils in Shastraic literature. *Vyasarayar Matam* is situated in Little Conjeevaram and belongs to the Madhwas. Here pilgrims are given free lodgings.

The Festivals of Conjeevaram and the Pilgrim Traffic :—There is no period in the year without a festival at Conjeevaram in one or other of the temples. The most important festival of this town is the *Garudotsavam of Varadarajaperumal.* This festival generally takes place in the month of June. The region of influence of this festival can be seen from the map. More than a lakh of persons come to this festival from all parts of India. The other festivals which attract many pilgrims are the *Pangunothram* of Ekambareswarar and the *Brahmotsavam* of Sri Kamakshi. The regions of influence of these festivals are much smaller than that of the Garudotsavam.

There are 22 choultries in this town. Every important community has got a choultry, founded by some rich man of that community or raised by public subscription. They provide lodging for pilgrims coming to this place and some of them also feed the pilgrims free of cost. During the important festivals every



IV. HINDERLAND AND RELIGIOUS "ATTRACTION" OF CONJEEVARAM. 1=Railways; 2=Limit of "attraction" of the Garudotsavam festiwal, and also of the region from which more than 100 persons came to Conjeevaram during the year; 3=Limit of region from which not less than 500 persons came into Conjeevaram during the year; 4=Limit of region from which not less than 1000 persons came during the year; 5=Limit of "attraction" of the Brahmotsavam festival of Kamakshiamman; 6=Limit of "attraction" of the Pangunottaram festival; 8=Limit of region to which Conjeevaram distributes goods; 9=Limit of region from which Conjeevaram collects goods.

(See appendix—Note on maps, for explanation of method of drawing of the various limits shown on this map.)

choultry feeds many people. In addition to these, many people in the town also feed the pilgrims who have come to attend the festivals. The most important of the choultries are the Gangabai's choultry, the Golla choultry, the Arni Jagirdar's choultry and the Pachiappa Mudaliar's choultry.

The growth of the town was due to its situation, which made it the regional focus or the centre for the Palar basin. It became for the same reason, the Capital of the Pallava kingdom and the others that followed it. Thus it became the political centre of that region. Then it became a religious centre because of the construction of many temples by the Kings and the establishment of Matams. The above-mentioned three factors were responsible for making it an important industrial centre, where the traditional weaving and dyeing, brass-working and wood-carving flourished. In these many respects, Madura in the South and Benares in the North are both similar to Conjeevaram.

The development of Madras so close to it has largely sapped Conjeevaram of its vitality as regional centre, though its situation has as much advantage as that of Madura. Cheap electricity from the Mettur project may help the cottage industries and perhaps revive them. The traditional skill of the craftsmen of Conjeevaram is well worth preserving, but it will survive only if they get opportunities for exercising it, in response to a well sustained demand for their products. The 'Temple industry' (if one may call it so, on the analogy of the 'tourist industry') is in a declining state, and is bound to decline still further with the spread of western education and its emphasis on reason as against the faith that had not only built the temples but had for centuries maintained them and their very numerous dependents in affluence. Conjeevaram is a city of the past.

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APPENDIX

Note on the Maps :—This note has been prepared so as to be of use to those who wish to know how the maps were drawn, and to those who wish to prepare similar maps for other towns.

Map No. 1 :—This map of the Palar basin was originally drawn on the 1: 1,000,000 scale and is based on the 1: 1,000,000 map. The Geological details have been incorporated from the 1: 2,000,000 Geological map of India. All the routes on which regular direct motor bus services ply between Conjeevaram and other places have also been shown. This information was collected personally at Conjeevaram. It would also be available for every district in the office of the District Superintendent of Police who is the licensing authority for motor vehicles.

Map No. 2 :—The distribution of house types and the details of land utilisation shown in this map were plotted originally on the scale of 10″=1 mile and finally drawn on the scale of 5″=1 mile. The information was mainly collected personally by visits made to supplement previous knowledge of the town. *Map No.* 3 was also drawn similarly.

Map No. 4.:—The regions for which Conjeevaram acts as a collecting and distributing centre and the extent of its influence or "attraction" as a religious centre are shown in this map based on information obtained chiefly from the railway authorities. The limits of the areas over which Conjeevaram collects and distributes goods were drawn by plotting separately the places sending goods to the town and receiving them from it lists of which were provided by the railway, the silk and cotton merchants, and in the case of motor and bullock cart transport by road, by personal enquiry. The limits of "attraction" of Conjeevaram as a religious centre and during each of its principal festivals are based on a list of places from which railway tickets collected at Conjeevaram Station had been bought, in 1935, (a) during the whole year, and (b) in each of the months in which the three important festivals occurred in that year. Only those places from which over a 100 persons had come to Conjeevaram in any one month of the year were plotted to determine the limit of its religious "attraction." Three grades of 'attraction' have been distinguished by drawing lines showing the regions from which (1) at least a hundred persons had come in any one month, (2) over 500 persons and (3) over a thousand

persons had come during the whole year. The 'attraction' of each of the three festivals was delimited by plotting for each all the places from which not less than a hundred persons had come into Conjeevaram during that month.

The correctness and value of this map is limited by the following circumstances. The information concerning the trade of Conjeevaram is complete only for that part of it which is carried by the railway and only approximately correct as regards road transport. The limits of religious 'attraction' are based only on places from which over a 100 persons had come in any one month and consequently all those places from which a smaller number had come are left out of account. The grades of attraction are based on figures calculated for only those places from which at least a hundred persons had come in one or more months of the year. These figures therefore overlook smaller numbers of passengers who might have come in other months of the year. The numbers of passengers which have been taken into account in drawing these limits are only those who came by railway to Conjeevaram and also handed over their tickets at Conjeevaram railway station. Quite a large number of pilgrims who come into Conjeevaram travel by road; there are also ticketless travellers on the railway and other railway passengers, like the increasingly large numbers from North India who travel with circular tickets, who do not hand over their tickets at Conjeevaram.

Some Aspects of the Geography of Soviet Russia

By

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The present-day Russia is in all respects a new product, a complete change from the Russia of the Tsarist regime. In the daily press occasionally we come across some news about Russia, but not the entire news. Till recently, all literature about Russia was banned in India, and those little red books were the forbidden fruits to the intelligentsia of this country.

As a Geographer mainly interested in the geography of the world, I ventured to write in this article what little I happened to know about the Geography of Soviet Russia gathered from books and lectures delivered at the London University and news gathered from illustrated Russian papers and from some friends. I am first and last a Geographer and as such I am here dealing only with the Geography of the country, the vast strides taken in the development of agriculture and industries, without in any way believing in the suitability or otherwise of the new Government set up there since 1917. Knowing the nature of the information given in this article, I commend it entirely to my Indian readers, as Geographers overseas have better opportunities of studying Russia even first hand. I include my apology for not giving a map along with the article, but in my opinion any good atlas will give all the places mentioned in the article.

The keynote to the changed Geography of Soviet Russia is as Mikhaylov says in his *Soviet Geography* only the new distribution of industry and agriculture in the country and the development of transport. In Pre-Soviet Russia, industry was unevenly distributed ; half the output of Russian industry was concentrated in the area of the Moscow-Leningrad-Ivanov region and the western part of the Gorki area. This was not the physical centre, nor an area of raw materials, but was the zone where the capital for the industries originated and developed. It was here that the empire was centred, and so the industries were drawn there. The Ukraine, although possessing coal and metal abundantly did not develop any industries, but only supplied the material for developing the industries of the Moscow-Leningrad area.

The distribution of industry did not correspond to the distribution of raw materials. There was no coal or oil at the base of the industry concentrated in the centre of the empire. Coal came from Ukraine, oil from Trans-Caucasia, and timber from the North. All raw materials for the industries, except flax, came from the different parts of the empire; cotton from Central Asia, wool from Khirghizia, and iron from the Ukraine; and the natural resources of these outlying districts were exploited irrationally. Even within this industrial centre, industry was not distributed evenly and rationally. Dependence of Russia on foreign capital was the reason why every third factory was situated on the western frontier, then including Poland and the Baltic States which are not now in Soviet Russia. Away from this industrial centre, there extended an illiterate continent, "the land of foreigners and beggars."

As a result of the pursuance of the policy of industrialisation in Soviet Russia, the country from being agricultural has now become industrial and economically independent. The industry of New Russia works according to plan; while old enterprises are being reconstructed, gigantic construction of new enterprises is in progress as well. The choice of each site of construction is made on a general State plan; and a rational lay-out of industry from the standpoint of national economy was thus created. New works were so situated that the territorial separation between raw material and its utilisation in the manufactures, was minimised; this kind of planned production and distribution excluded competition from the centre. To establish equality *de facto* among all the peoples of Soviet Russia it is essential to destroy the economic backwardness of the population of the former colonies of Russia. Hence regions like Trans-Caucasia and Central Asia are being industrialised at a rapid rate.

Industry is moving to the East, and there amidst extraordinarily different conditions powerful industrial combines are being formed. The most important of such combines is the Ural-Kuznetsk combine based on the iron ore of the Urals and the coal of the Kuznetsk basin in Siberia.

In Soviet Russia there are no longer any purely agricultural regions; the once backward village is now being raised to the level of a modern city. The distribution of industry is being smoothed out. The new industries are laid out according to a plan which combines calculation with hygiene. There have been no new fac-

tories in Moscow and Leningrad since 1932. The new industries move to the provinces and to the rural areas, so as to raise their industrial and cultural level on a par with that of the developed regions. The centre sends complex machines to the outlying districts, and engineers are sent to work in the new factories. The effect of this new distribution of industry in Soviet Russia differs from that of other countries in the fact that while new regions in Russia grow up, the old ones do not fall into decay, but continue to grow though at a slower pace.

Coal-mining in Russia during the days of the Czar was practically confined to the Donetz Coal-field area. The coalfield region of Moscow could not develop because of the competition from Donetz; even in the Donetz basin, mining was very irrational, with no thought for the future. But Soviet Russia has reconstructed the coal industry and has almost trebled the output. With the movement of new industries to the east, the Kuznetzk coal-field was developed rapidly and 12% of the Russian output now comes from there. The other areas which are now being developed are the Karaganda basin, the Chelyabinsk brown coal district and new areas in Central Asia, the Trans-Caucasus, in Siberia and the Far East. Although the Donetz basin still remains the most important coal district in the country, it is no longer the only important one.

So also in the oil industry, the predominance of the Caucasus was undisputed during the Tsarist regime. Baku was then synonymous with petrol and the output of other regions was quite negligible. But to-day Russia stands second only to U.S.A., in oil output. Primitive methods have been replaced by perfect ones, and oil is being obtained in different regions as Emba on the north-east of the Caspian Sea, Fergan Valley in Central Asia and in Sakhalin in the Far East. The most northerly oil centre is found in the Pechora basin, where derricks have sprung among the firs. Although Baku and Grozny are still the most important petrol districts, they are fast losing their monopoly.

In non-ferrous metallurgy also, Soviet Russia has advanced considerably. The new distribution of this industry is effected by the transference of a large mass of capital investments in the basic regions of the raw material. Copper, lead, zinc and nickel are mined in Central Asia and the Urals. The huge gold resources in Siberia, Urals and the Altai are being tapped in the new regime. The backwardness of Russia in the past was greatly due

to the feeble development of machine-building, but in the Soviet regime, machine-building became the main lever of the reconstruction of the entire national economy. Tractor building, motor-car and aeroplane construction are some of the new branches which have been created.

Another industry which has developed greatly in new Russia is the chemical industry. The nitrogen, coke-chemical, anilyne dye, potassium and apatite branches of the chemical industry were in fact new creations. Extraction and concentration of apatite (phosphoric raw material) is done in the extreme north of the Leningrad area in the barren Khibin mountains of the Kola Peninsula. This relieves the country from the need for imported fertilisers. In the Bay of Kara Boguz, they have found a rich source of Glauber's salt. Synthetic rubber works are established in Yaroslav where also alcohol is derived from potatoes. Thus new centres of the chemical industry are springing up in the land. Cotton, flax and silk industries, paper and sugar manufactures have all received a fillip in the new regime.

The timber industry in the north and east of Russia has grown considerably, and the export of timber has increased ; Russian pines, fir, walnut and cedar are now on the world's market. Huge wood-working enterprises, and the cellulose and paper combines in North Urals and Eastern Siberia are evidences of the developing timber industry.

Industries in general received a fillip in Soviet Russia, through the extensive use of combines. The idea of combines (or amalgamated production) pervades Soviet industry and its distribution. The Dnieper, Magnitogorsk and Kuznetzk combines are some of the well-known. Inter-regional combines are also formed, as for instance the Ural Kuznetzk combine which makes use of the Ural iron ores and the Kuznetzk coal. The whole of Soviet Russia is thus becoming a combine of combines.

Now for the new distribution of agriculture in Soviet Russia. In the Tsarist regime, agriculture was attracted to the central, southern and the black earth rigions. The poor peasant was oppressed by the survivals of serfdom and he farmed only on a semi-subsistence basis. In those days when capitalism flourished, and the demand of markets made itself felt, the same commercial crops were grown year in and year out, and thus excessively specialised regions grew up. But the abolition of private ownership of land in Soviet Russia made it possible for a rationalised geographical distribution of agriculture. Socialist development of

agriculture was achieved by consolidation, by the amalgamation of small holdings into collective state farms. In fact collectivisation is the keynote of Soviet agriculture.

Soviet Russia has completely transformed the agriculture of its country, by raising it from the low level of technique in which it was to complete mechanisation. The aim of the Five Year Plan was to clear away the forest and shrubberies, to drain the marshes and to introduce new and valuable crops. Each region now cultivates the crops best suited to it and thus gives the best results under given conditions.

In the north of Soviet Russia we find a belt of marshes, and in the extreme south an arid belt. From White Russia to the Far East peat bogs, sloughs and quagmires abound. Soviet agriculture is now draining those marshy areas, and the drained lands are sown with flax, hemp, vegetables and wheat. The marshes adjoining the Azov-Black Sea area are also being reclaimed, as well as the Colchis area in the Trans-Caucasus. The reclaimed areas along the east coast of the Black Sea are now fast becoming health resorts; and lemons, tangerines and tea are now grown there.

Desert land covers about half the area of Uzbekstan, and more than three quarters of Turkmenia; in the plains of Central Asia and in Kazakstan, precipitation is almost nil ; and settled life is limited only to the oases. But now a complete reconstruction of old irrigation systems and a speedy construction of new projects is going on. The Amu Darya flowing into the Aral Sea is diverted to fall into the Caspian, thus helping to irrigate the desert regions on its new course. The Desert Cultivation Bureau is reclaiming the Karakum and the Kizil Kum deserts. Cattle-breeding is one of the means by which the desert reclamation is made to yield a return ; desert pastures support the Astrakhan and other types of sheep in such areas. The productivity of artificial grasses is higher in these reclaimed pastures, and nomads are settling there. Research stations are being set up to investigate the possibilities of changing some of the inedible plants into edible and also about introducing new types of flora in those regions. The desert may be a symbol of human impotence anywhere else, but not in Russia.

Where agriculture once suffered from drought, now a change of crop or an introduction of new varieties is taking place with the aid of science. Where the soil had deteriorated owing to predatory methods of farming, now direct and indirect fertilizers are

used to enrich the soil. Indirect fertilizers liberate the nutritive substances already in the soil. Sandy soils are being made firm by planting with seeds of grass from aeroplanes.

In Tsarist times only the black soil area roughly south of a line from Kiev to Sverdlovsk was producing wheat. North of the line, the podsol region was not producing wheat but only " consuming " it. The north was dependent on the south, because the soil in the north was more difficult to work. But now Soviet agriculture has taken wheat to the north as well, direct into the " consuming " region. The movement of agriculture to the east continues as well. Huge grain industries developed on former desert steppes. Rice production is moving towards the north. Once grown in Central Asia and Trans-Caucasus, it is now grown in Kazakstan, in the North Caucasus, in the Azov Black Sea Area and in the Ukraine. Research stations and model fields are found in large numbers. Cotton, once grown only in the Trans-Caucasus and Central Asia, is now grown on the eastern shores of Azov, and on the northern shores of the Caspian and Black Seas. New regions of agriculture are being created on the high hills of the Pamirs, on the Volga delta and within the Arctic Circle.

Special mention should be made of the polar agriculture of the Soviet Government. Coal, oil and apatite found in the Arctic Circle have given rise to extensive mining industries. In addition to these, industries like fish-tinning and timber combines have sprung up on the sea-ports. The presence of these industrial populations naturally evoked a desire for food and milk and Soviet Russia was ready to cater to their needs on the spot. It is not an exaggeration to say that this does not at all mean an adaptation to circumstances, but " a veritable alteration of nature itself." The temperature of the soil is regulated; and lack of heat in the region is compensated by the abundance of light for half the year, thus enabling fodder crops to be grown. Market gardening is done on a large scale to supply the requirements of the industrial areas. Grass is sown from aeroplanes, thus aiding dairy-farming. Hot houses grow vegetables and flowers; there is a polar botanical garden at Kirovsk. Agriculture has indeed been pushed to the very shores of the Arctic Ocean; and " agriculture in Soviet Russia knows practically no bounds." Igarka within the Arctic Circle is one of the best of modern towns, having in itself all the amenites of present-day civilisation.

Soviet Russia possesses a variety of climatic regions that it is possible to introduce new crops in her agriculture, as well as to

renew the old flora. Sorghum for instance is now tried in her drought regions in South Ukraine. The Soya bean is now grown in Ukraine and in North Caucasus. Jute is tried in Azerbaijan; Egyptian Cotton in Tajikstan and rubber in South Russia. Among the other new varieties introduced into Russian agriculture may be reckoned the Algerian cork-oak, tea, oranges and lemons, Brazil nuts and the Australian acacia. Cattle breeding also is going on according to a definite State plan. As we have already stated with reference to the Soviet Polar agriculture, dairy cattle are finding a place even beyond the Arctic Circle. Selective breeding is done in the breeding stations with a view to evolve ultimately the best type of cattle. The hunting of wild animals for fur is carefully regulated; and sanctuaries have been provided for beaver, roc and deer.

In reviewing the new distribution of industries and agriculture as a sign of progress under the Soviet regime, we should also take into account the useful part played by the development of transport. In old Russia, the parts were not easily accessible and communication was difficult. But under the Soviet regime, powerful locomotives and larger waggons have contributed to the usefulness of the railway, and at the beginning of 1936 there were 94,000 kilometres of railway in Soviet Russia. River, canal and motor transport have likewise been developed and made more efficient. Above all, civil aviation has been very highly developed. Aeroplanes are used to serve the needs of agriculture, for early sowing in muddy fields and for sowing grass in sand dunes. When lightning sometimes causes fires in forests, planes specially equipped for the purpose, are sent to end the calamities. Forests are surveyed by plane and their resources calculated. Even in Ordnance Survey planes are extensively used. But their main role is for transport service. Regular air services are run across the country: from Minsk to Vladivostok, Leningrad to Tiflis, and Moscow to Tashkent are some of the main lines. In the Arctic and in the Far East aeroplanes guide ships and ice-breakers. Villages in the Pamirs are connected by air services only and by none other. So much so when a villager from those hills happens to see a motor car on the plains, his idea of it is that it is only "an aeroplane without wings running on the level ground."

That in short is a brief summary of the Geography of Soviet Russia. As Mikhaylov says, that Geography "is not born, but created." It is "not a spontaneous development, but the accomplishment of a plan."

Recent Contribution to the Study of the Quaternary in India and some late Developments in Prehistory*

By

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ON THE BORDERLAND

As recently as 1934, Prof. R. A. Daly[1] reminded the scientists in America that there is a field of study lying between the historical realms of Geology and Archaeology to which the application of the concerted research methods of both would prove very fruitful in helping us to decipher the story of ancient man. Probably few here could appreciate Prof. Daly's words as well as I can, for as a geologist, when I commenced the research of the Kortalayar valley in 1935, I had experienced the disadvantages of ignorance on archaeological subjects. It is this lack of knowledge into the artefacts of Prehistoric Man that creates a disbelief among the historians in his handicraft, especially in the lithic ones. As I began to reconnoitre this valley, I was first attracted only by the Coups-de-poing and cleavers which would attract the attention of any amateur collector. But the flake tools, the unattractive ones have escaped the notice of previous workers and of myself at the outset and their omission would make the industry quite unrepresentative. To appreciate this industry as a whole a thorough training in the methods of tool making is an essential requisite for the geologist engaged in quaternary research. Round Madras I have found implements of all types, Abbevillian, Acheulean and Micoque types: and animal fossils having so far been not searched for methodically—a thing which would have furnished additional proof of the Pleistocene age of the formations—I was left with these tools alone to use them as index fossils and other geological evidences. My work has shown me the geological importance of the archaeological finds and it is the geologists' ignorance in the archaeological matters that has missed for him many opportunities of contributing to one of the least known yet most fascinating chapters of human history.

* Paper read in the Archaeological Society of South India in August, 1937.

Prehistory pertains by right to the department of archaeology. But up till now the archaeologist's best friend has been the spade ; and so far as the glory of the spade is concerned, it has apparently reached its culmination in India by bringing up Mohenjadaro which has come to be a household word. But Homo sapiens has an antiquity compared to which Mohenjadaro is perhaps a thing of yesterday; and all the period prior to it has a legitimate claim at the hands of the archaeologist, and he cannot shirk this claim and shift it on to the geologist to whom the activities of Homo is but a minor one among numerous items.

India has been regarded till now as a field remarkably poor in the matter of affording materials bearing on prehistory, but this is not the place to controvert this view and I will confine myself to the simple assertion that recent work[2] has been showing that India gives promise of affording a particularly rich field. In Europe the archaeologist especially in France has quite recently almost within the last two or three decades raised the study of palaeolithic flint implements into a fine art.[3]

Prehistory is the subject which deals with the story of man and everything that concerns him from that dim remote moment when he first emerged from his animal ancestry until the time when the existence of written records leads the investigator into the realm of History proper. Obviously the extent of time covered by the Prehistorian is vast and geological. Therefore his environment as well as his culture must have changed, and changed remarkably,—the intervals of change being also immense.

The only way to get a quantitative idea of both these changes is to apply the methods of stratigraphy and typology. These two terms have become common-places and specifically adopted since the time of Montelius. However, their importance is still far from being understood by the majority of the people working in this line.

The stratigraphical method of approach to this subject depends on the geological law of superposition which states that in the case of deposits resulting from aggradation the lower beds are progressively older than the upper ones. In the case of cave and rock shelters this law is easily followed but when coming to open stations it is not so easy to apply this law straight away without understanding the complex of the geological processes which at each spot introduce irregularities changing the local superficies,

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In Europe within the Quaternary times the climate has undergone refrigerations four times with intervening warm periods. These pauses, Günz, Mindel, Riss and Würm, with their interglacials are definite landmarks in the evolution of palaeolithic cultures. This scheme has been worked out by Penck & Brückner round the Alps and is now finding wide acceptance with certain local modifications. Corresponding with these glacial maxima, the sea level had also suffered changes of base level which caused the rivers in the valleys to cut into their own beds and form terraces. There are 4 such terraces corresponding to the 4 glacial maxima and as man has also lived in these terraces successively, his industries pertaining to the time of the formation of each terrace are preserved in each. And the archaeologist who is interested in the changes of culture in a particular valley, will have to recognise these terraces first. It is the want of recognition of such terraces in the Indian rivers that has hampered further progress. This turns out to have been rather a fatal mistake.

With the advent of Dr. Terra's party in India to work the Pleistocene Geology round the foot hills of the Himalayas and Rawalpindi and in the Valleys of the Indus, the Sohan, the Haro and the Jhelum, Indian Prehistory has entered upon a new chapter. Dr. Terra and Mr. Paterson have fairly well established polyglacial oscillations within the Pleistocene Ice Age of the foothills of the Himalayas and also 4 terraces of outwash gravels in the rivers lower down corresponding to the four glacial oscillations.

SEARCH FOR EARLY MAN IN THE PUNJAB AND KASHMIR

As the story of early man is intimately bound up with the geological drama of the Ice-Age period, during which mountain and inland glaciers advanced and retreated rhythmically across Central Europe, North America and parts of Asia, and as this uniform climatic cycle of glacial and interglacial stages affords the geologist a more minute classification of the pleistocene formations, Dr. de Terra chose the mountain areas of Kashmir far removed from the Punjab plains for understanding of the succession of events in the quaternary deposits of the Himalayan foot hills. He recently discovered in the Potwar area of the Punjab abundant indications of the Ice Age, lakes and floods. He remarked aptly "therefore the neighbouring Himalayas are the logical key region for a closer study of this Ice Age drama." He has proved the existence of an ancient Kasmir lake by tracing terrace-like benches cut into the rock and

equated them with the Karewa terraces above the Jhelum river. The terraces in the hill above Srinagar mark an ancient shore-line of this lake which at one time had attained great depth, for the bench mark lies 700′ above the terrace on which Srinagar was built. Abundant remains of fossil elephant and mammals are found in the lake deposit. A survey of the Sind valley has brought to light similar ice records. At Ganderbal a great moraine is found lying under a high gravel terrace with rocks smoothed and scratched by ice. This is the lowest glacial deposit. A set of five terraces enabled the expedition to recognize the effects of this glacial cycle even at places where typical moraine deposits are missing.

Table showing the Quaternary Sequence in N. W. India [2, 3, 8]

Period		Stage	Fauna	Glacial cycle in Kashmir	Prehistoric culture
Pleistocene	Upper	Redeposited silt		4th ice advance: T.M. 8,000 to 10,000 ft.	? Upper Palæolithic
Pleistocene	Upper	Erosion		3rd interglacial erosion	
Pleistocene	Upper	*Potwar:* yellow, loess-like silt, and gravel	Narbadda fauna in 'upper group'	3rd ice advance; 3–4 recessional moraines. T.M. 6,500 ft.	Soan culture in lower gravel and in silt
Pleistocene	Middle	Erosion		Long 2nd Interglacial; Upper Karewa beds erosion	Lower Palæolithic Soan culture
Pleistocene	Middle	*Boulder Conglomerate*	Narbadda fauna in Central India. *Equus, Bubalus, Hippopotamus, Elephas namadicus*	2nd ice advance; boulder clay and gravel in Karewa beds	In Punjab: worn flakes. In Narbadda valley: Chelleo-Acheulean; ? early Soan
Pleistocene	Lower	*Pinjaur*	*Equus, El. namadicus, Bos, Sus, Rhinoceros, Cervus, Felis, Sivatherium*	1st interglacial; Lower Karewa beds, birch, oak, pine-forest	?
Pleistocene	Lower	*Tatrot*	*Stegodon bombifrons, Hippohyus, Hexaprotodon, Pentalophodon falc.*	1st ice advance. T.M. 5,500 ft.	
Pliocene		*Dhok Pathan*	*Hipparion, Tragocerus, Stegolophodon, Bramatherium*		

To enlarge and test the opinions formed on Pleistocene stratigraphy and prehistory in N. W. India, places in upper Sind, Narbadda valley and Madras were also surveyed. Large waste flakes were found in a worn state in the "Boulder Conglomerate." The oldest definite industry consisted of a series of massive choppers and scrapers which seems to be ancestral to a Middle Palaeolithic industry discovered by Dr. Terra on the Soan river near Rawalpindi. Because of its distinct facies, he called it the Soan industry. Associated with the earliest Soan industries are rolled coups-de-poing which would indicate that the Soan culture extends in Prehistoric chronology from Abbevillain to upper palaeolithic. The

peculiar character of the implements may indicate a people distinct from the Acheul core tool manufacturers of South India. Thus Dr. Terra and Mr. Paterson have fairly well established polyglacial oscillations within the pleistocene Ice Age in the Himalayas and also 4 terraces of outwash gravels in the river valleys lower down corresponding to the four glacial oscillations.

Work in South India.—Though Mr. R. Bruce Foote (working since 1864) should be reckoned as the pioneer in prehistory work in and around Madras, his work suffered a set-back for nearly 70 years merely for want of trained workers in this field. From 1930 onwards interest has again been aroused by Mr. Burkitt and Messrs. Cammiade and Richards. Mr. Burkitt's paper—published on the Old Stone Age of S. E. India especially on the upper Krishna near Gundla Brahmeswaram has brought the existence of 4 distinct cultures, the Chelleo-Acheulean, the flake industries, the burin and blade cultures and a microlithic stage. These 4 cultures have as he says 4 distinct stratigraphical horizons which indicate 4 pluvial periods. The importance of this site for the chronologcal sequence of these cultures has been stressed by Mr. Burkitt and I was advised to check up his results once again. In and around Madras the maximum development of the palaeolithic cultures seems to go as far as the Middle Palaeolithic according to Prof. Abbe Breuil who examined our collections and probably to the stage of Stillbay of South and East Africa.

Lt. Col. Todd of the Royal Indian Marine at Bombay has recently brought to the notice of the pre-historians the existence of palaeolithic man round about Bombay. His paper read in the "Proceedings of the Prehistoric Society of England" has aroused a lot of interest as for a long time Bombay had been considered a palaeolithic void. He has on the basis of stratigraphy shown a cultural evolution of palaelithic, mesolithic and neolithic cultures.

Major Gardon[5] has contributed a masterly piece of work on the most ancient cave paintings of Central Provinces, Mirzapur, and Raighar state. He has set at rest the attempts of previous workers in the same area to find a similarity of these paintings to that of Altamira or Cogul. He has found 5 stages based upon colour, superposition, and styles and dated them from the 6th century B.C. to 8th century A.D. From the occurrence of microliths on the surface in the same caves and rock-shelters he has tentatively thrown a suggestion that the so-called Mesolithic age in India was coeval with these paintings in which case they appear to be a very

late introduction which will not compare with the mesolithic period of Africa or Europe. This suggestion was not however accepted by the European prehistorians as they say that cave exacavations should be done scientifically before connecting microliths with the paintings.

Changes in the Nomenclature.—The Pleistocene cultures of Europe have been worked out to a very high level of precision which has so far been supplemented only by work in the Southern Hemisphere in the African continent. In India Dr. Terra and Mr. Paterson shewed for the first time that prehistoric man had also lived round about Punjab, while the quartzite men roamed about Deccan. For a long time when only the finished products like the Coup-de-poing of the Chelleo-Acheulean industries attracted the attention of the amateur prehistorians and collectors of antiquities, it was presumed that the Chelleo-Acheulean industries represented core forms while the middle and upper palaeolithic consisted of purely flake and blade types. Prof. Abbe Breuil of Paris has established recently two distinct flake industries side by side with the lower palaeolithic core forms and named them Clacton and Levallois. In Europe these names had technical and cultural meanings. Similar flake tools have been distinguished in the Chelleo-Acheulean levels in *Africa* and recently in *India* both in the north and south and also in Java. As these flakes conformed to the European types of Clacton and Levallois, the prehistorians working in the Southern hemisphere did not hesitate to adopt these names. Mr. Burkitt took strong objections to this procedure in the beginning of this year; but after a long discussion and a conference of prehistorians and geologists, it was finally agreed that these names should be used to denote the techniques as found in the European artefacts.

Connection with the work in the Far East.—In the recent discoveries in Java near Patjitan by Dr. Köenigswald and Dr. Calenfels of a similar Chello-Acheulean industry they came to some conclusions in which they said that the Javan industries while bearing a general similarity of evolution to the Madras industries, insisted also that the flake tools are of special significance in Java. The results were based upon third hand evidence about South Indian artefacts obtained from Menghin's Steineit der Welt." The work of my colleague Mr. Drummond and myself has shown that the flakes form as important a part in the inventory of lower Palaeoliths in South India.

Question of Chronology.—While a relative chronology is supplied from the geological methods of stratigraphy, a distinctive and within limits revolutionary technique for determining the absolute chronology for the last 12,000 years since the post-glacial retreat in the North-West Europe was contributed by Baron de Geer and his colleagues. His method known as *Geochronology* is derived from the study of varves, clay laminae, deposited every year due to the melting of the glaciers. As the ice retreated it gave more space for the expansion of man and neolithic and early bronze age cultures have been definitely dated, whereas previously they had been roughly correlated with the advanced protohistoric cultures of Egypt, Mycenae, Crete and Troy. Side by side with this method another technique has been developed to give a better notion of the changes of floral environment along with the development of human culture. From peat deposits of Central Europe and on the coastal fringes on both sides of the English Channel, Von Post of the Stockholm Institute of Palaeo-Botany and Geology has found that the climate has undergone a twice repeated cycle of Boreal and Atlantic and sub-Boreal and sub-Atlantic. The main mass of evidence comes from the pollen grains preserved in the peat deposits. There has been a steady invasion of forest trees with pine maximum during the Boreal times, hazel and oak mixed forests during the Atlantic times and in the sub-Boreal and sub-Atlantic times beach came in. The usefulness of the pollen analytical method in conjunction with the stratigraphical method cannot be adequately expressed in words.

In New Zealand peat bogs have been studied by the application of this method in the last 3 years and the work promises to yield very good results regarding the evolution of the primitive cultures of that island. Can this method be applied to India ? I feel that the whole method is applicable in toto, only the Botanist should co-operate with the Geologist and the Archaeologist to study these deposits. On the east coast there appears to have been a neolithic submergence from Vedaranyam to Valimukkam Bay from which a lot of neolithic artefacts have been reported by Bruce Foote. On the west coast from Trivandrum to Cochin there is also a lignite bed covered by laterite the exact age of which is still not settled by the geologists. These are all excellent places to begin this study which will bear on the Neolithic age of South India with great significance.

A second technique also of a botanical nature for supplying an absolute chronology is known as *Dendrochronology*. This

method was discovered and perfected by an astronomer Dr. A. E. Douglas as recently as 1929. His method is derived from the study of annual growth rings of timbers from ancient ruins. Their variations were correlated through other data by him with variations in rainfall and the count of annual rings indicated the years in which the trees had been cut and the ruins built. While the method is applicable only to regions arid enough to preserve wood, the peoples in such regions often traded far and wide; hence, their chronology can be made to serve for the regions in which objects entering into their commerce can be found. It has been settled from this research that the entire development of the Pueblo Culture took place within about 2,000 years instead of 4,000 years as previously assigned. The archaeological potentialities of this method are very great and it may well take its place in the annals of novel techniques in science.

The Upper Palaeolithic Cultures of Europe.—The Upper Palaeolithic blade and burin cultures of Europe have been assumed for a long time to run a uniform course throughout Europe but due largely to the work of Abbe Breuil it has been pointed out by him that the French sequence will not hold good for the rest of Europe and Asia. Last year in the Blackpool Congress[6] of the British Association for the advancement of Science Miss Garrod took a bird's eye survey of the present position of Prehistory from the knowledge of work done in Russia, China and her own work in Palestine. She has to the satisfaction of her audience put the origin of the Mid-Aurignacian somewhere in the Persian plateau, an idea that was never entertained by the previous prehistorians. My colleague Mr. Drummond's work in Sind and Rohri has brought to light a late upper Palaeolithic culture which seems to show some connection on the one hand to the Egyptian and on the other to the Bellary neolithic types.

Conclusion.—Public interest in archaeology has enormously increased and in educated circles abroad it is one of the most highly appreciated subjects, and excavation continually brings to light new and admirable material especially in the east. European prehistory has in the last decade advanced in a manner calculated to make us feel that to use the words of Prof. Boswell[7] (1936) " we are living in the Golden age of research in Prehistory." The work of Abbe Breuil in the Somme valley has made Prehistory an exact science and the study of the technology implied in the artefacts has made us almost visualise ancient man fabricating them, and notable efficiency has developed in all methods of approach by

the co-operation afforded by experts in geology and other natural sciences whom the increasing importance of the subject has interested. An undeniable weakness in conducting research into prehistoric archaeology would be unimaginative and stereo-typed attitude towards historical and cultural phenomena. No state of culture, no evolutionary stage is or ever can be uniform. Recent work on this subject in India as elsewhere has undoubtedly succeeded in proving that a considerable body of archaeological conclusions regarding Prehistory have to be given up as obsolete. If Indian Prehistory is to take its proper rank in the world's work on this subject, stratigraphy, geography, morphology, botany and zoology will have to contribute their latest methods of investigation. There should be a cessation of the non-co-operating attitude among Indian scientists and they must widen the avenues of their work so as to go into every other department, irrespective of any fear of being regarded as trespassers. It is this very co-operation that in Europe has erected Prehistory into a distinct science.

I may in conclusion mention that only last year there has been opened in the *London Institute of Archaeology* a separate department for Prehistory and Geo-chronology and that very recently there has been incorporated in England the PREHISTORIC SOCIETY, an enlargement of the Prehistoric Society of East Anglia which is conducting a biennial official journal for making an up-to-date speedy presentation of the latest methods of prehistoric research. Indian Prehistoric work was vigorously discussed at the symposium on Early Man, organised by the Academy of Natural Sciences at Philadelphia in March 1937. The Raffles Museum at Singapore has arranged the 3rd Prehistoric Congress of the Far East to take place there in the end of January 1938 where again the recent work of Dr. Callenfels and Dr. Koenigswald in Java and the work now being carried on in Burma and Mandalay by Dr. de Terra would be discussed in the light of that already done by him in India since 1932.

Indian Prehistory has in these circumstances to take quite a new orientation to put the cultural heritage of India on a firm basis.

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" The Badagas "

By

T. H. Vivekanandam Pillai, B.A.

The Badagas are one of the hill tribes in the Nilgiris. The name Badaga or Vadugan means Northerner and the Badagas are believed to be descended from the Canarese colonists from the Mysore country, who migrated to the Nilgiris, three centuries ago, owing to famine, political turmoil or local oppression in their own country. From the Tamil word வடக்கு they came to be known as வடக்கர்கள் which has been changed into " Badagas." They are sometimes called " Burghers." Concerning the origin of the Badagas, the legend of seven brothers, who are now worshipped under the name of "Hethappa" or "Hetha" is current.

The Badagas occupy the whole of the eastern half of the plateau except the tract round Kodanad; but in the west and in the Kundhas they are few in number. In recent years a few have migrated to the Anaimalai Hills to work in the hill plantations. According to the census report, in 1921 there were 19,196 Badaga males and 19,263 females.

The inter-dependence of the Badagas and the other hill tribes is very interesting. The Badagas at first had some difficulties in being received in a friendly way by the original hill tribes like the Kurumbas, the Irulas and the Kotas. In course of time they earned the friendship of these people and gradually they developed the spirit of mutual helpfulness and co-operation. Every Badaga family has its "Muthu Kota," from whom it gets the agricultural implements, pots, etc. In return the Kotas receive an annual present of food grain, potatoes, etc. Again the Kotas have to beat the drums and blow trumpets when death occurs among the Badagas. The Badagas give presents to Todas annually in kind for their occasional help in cattle farming. The Kurumbars are necromancers of the hills ; and the Badagas are consequently terribly afraid of them. To keep them from interfering in their affairs, the Badagas give presents to them in kind even now.

The Badagas dwell in extensive villages, generally situated on the summit of a low hillock, composed of rows of comfortable

thatched or tiled houses and surrounded by fields of samai, korali, etc. Their houses are very compact; and practically they have no proper arrangements for ventilation and light, because of the cold climate and their poverty. The Badaga villages are called "Huttis" and consist of twenty or thirty houses in a row and look like a modern 'store.' The word "Hutti" is a variant of the Tamil word "Patti," which means a farming village. In every village there is a raised platform constructed of stone, called "Suthu Kallu" where the Badagas sit at ease and chat when they have no work.

A Badaga presents a very primitive appearance. He wears only a loin cloth which does not reach below his knees, and he wraps his body with a big coarse thick blanket or shawl or sheet. He wears a big turban or a kind of night cap to protect his head from rain and sun. He does not want to adorn himself in rich and fine attire. He is even satisfied with using twigs or match sticks or threads for links and buttons. He cannot afford to spend even for minimum of clothes because he is poverty-stricken. He shaves once in a blue moon. He embellishes his face by smearing sandal paste all over his forehead, neck and ears. Even a poor Badaga will have a pair of gold ear-rings, which flash in the sun-light, and twinkle in the star-light. He has a stout stick in his hand and a patch-work umbrella under his arm. The hoydens and tomboys of the Badagas attract the attention of the town-dwellers, who call them "Holeyas." These urchins wear a dirty 'motley' multi-coloured dress with stout sticks in their hands. They go fearlessly to the fields and grazing grounds helping their parents to drive the cattle. The Badaga woman has a small *mundu* round her waist and a big stomacher protects her body from the chilly winds. She has a coarse kerchief round her head. We hear the twinkle of her silver bangles when she is at work, or when she plucks tea-leaves or coffee-seeds.

The food of the Badagas is ragi paste, which is simple but nutritious. Only during the feasts do they take to rice. Moreover, they find that ragi is cheaper than rice, because paddy is not grown in the Nilgiris and ragi is grown in abundance. They drink coffee, which, because of the cold climate is a necessity for them and not a luxury.

The Badagas lack cleanliness. They can afford to be clean by taking regular bath and by washing their clothes every now and then. Their primitive mode of life and habits of laziness prevent them doing so. They do not take bath even once a week,

which may be partly due to the cold climate of the hills. Their clothes are very dirty; and they fall easy victims to infectious diseases. The Badagas, like the other hill tribes of the Nilgiris, are generally verminous and harbour lice in their hair and clothing; and these constitute ideal conditions for the maintenance and dissemination of infectious diseases like relapsing fever, influenza, etc.

The 'Kotas' are the artisan communities of the Nilgiris, while the 'Todas' are the pastoral tribes. The agricultural element is represented by the 'Badagas,' almost all of whom are agriculturists. Even the poorest among them has a small plot of land where he is "the monarch of all he surveys."

Generally the Badaga women do all the outdoor farm work, while the Badaga men go to earn some hard cash. To a Badaga therefore his wife is an asset. The Badaga women also work in the estates for a few coppers. After preparing food for the members of the household, they walk three or four miles to the place where they have to work. While returning from their day's labour, they trudge the weary way with a bundle of firewood on their heads.

Though primarily the Badagas are agriculturists, yet there are among them schoolmasters, clerks, public work contractors, bricklayers, printers, sawyers, forest guards, etc. Many work on tea and coffee estates, breaking stones and repairing hill-roads. Some earn their wages in the cordite factory at Wellington and a few own small coffee and tea estates. Among them there are lorry-drivers and lorry-owners.

The Badagas are the most progressive of all the hill tribes and are always willing to test any new method of cultivation or new crops brought to their notice by the Nilgiris Horticultural Society. They are practical geographers, and know when they would get rain and when to sow and reap. They understand the need for rotation of crops well. They raise a sort of thick fence round their terraced fields immediately round their villages and grow potatoes, ragi, samai, garlic, onion, beergangi, korali and wheat.

The average rainfall of about 25 inches is sufficient for these crops. In the words of Dr. Baikie, "the cold weather or winter of the Nilgiris is like the spring of North Persia, or the autumn of South France, and the monsoon is very nearly a mild autumn in the south of England." Such a fine climate would

naturally enable them to work all day long in the fields without strain or fatigue. The climate in the Nilgiris enables walking long distances; the Badagas walk without any difficulty more than thirty miles in a single day.

Generally their holdings are subdivided and fragmented so much so they could not have large scale production in agriculture. Frequently they borrow money from the "Labbais" at an exhorbitant rate of interest for building purposes and for purchasing manure and agricultural implements. But they are punctual in discharging their debts. The advent of the agricultural societies greatly relieved these poor agriculturists from the clutches of the "village Shylocks." There are about 50 agricultural credit societies, 6 non-agricultural credit societies and about 6 purchase and sale societies. Of the 59 agricultural societies, 54 are exclusively for the Badagas.

The Badagas are Hindus. According to Mr. Grigg they recognise 18 different castes or sects. These are however simplified by Mr. S. M. Natesa Sastri into 6, five high castes and one low caste. Except the highest sect and the lowest sect, the rest of the four sects are permitted to inter-marry. Among them a good many are 'Lingayats.' Goddess Mariamma is their important deity. The Badagas also observe untouchability. The 'Lingayats' and the 'Haruvas' (so called because they wear the Brahminical thread) are vegetarians. The rest of the sects, except a few among the 'Adhikaris' take to flesh-eating.

Mr. Thurston in his book *Castes and Tribes of Southern India* says that there are barbers, washermen and scavengers among the Badagas. They have no special caste of barbers so far as I know from my experience with them. One who shaves another receives from him the same service in return; thus neither of them spends a single pie in the business. It is worth noting that they do not always use blades or razors for shaving. Often they make use of a thick piece of glass, for example from a broken soda-bottle.

Badaga language is a spoken language. It is a mixture of colloquial Tamil and Canarese. But more than 70% of the words are Canarese.

The Badaga names are peculiar. Maniatti; Bembatti; Adhikaratti; Melatti; Mukkimalai; Mullimalai; Kinnakorai; Kundhachappai; Jegadhalah; Nanjanadu; Baigaimund; Melur—are names of Badaga villages.

Ajja ; Kakka ; Bella ; Bithia ; Chakkolai ; Chenna ; Hari ; Nandhi ; Dhona ; Sirangi ; Karcha ; Kuttuthatha ; Madha ; Jogi—are names of Badaga males.

Sinugi ; Beeki ; Kunthi ; Pattarami ; Lingi ; Nanji ; Baby—are names of Badaga females.

The Badagas have their "Habba" that is their festival in accordance with the Hindu customs. During festive days they spend their time in feasting and merry-making. They sit round bonfires and sing their favourite tunes as they warm themselves. At times they would spend their time in dancing and playing.

The Badaga marriage customs are primitive ; and the facility of divorce among them may shock our ideas of morality. If a Badaga wants to marry a girl, he pays a hundred rupees to the parents of the bride and gets the bride home. If the bride does not like her husband, she is at liberty to choose another, after paying him one hundred rupees—the sum which the husband paid just before his marriage. In the same way if the husband does not like his wife, he can choose another after divorcing her by paying a hundred rupees to her and she too can marry another. She can carry on intimacy with impunity within the pale of her own community. Polygamy is permitted and plurality of wives is a gain to the husband ; and each wife becomes a bread-winner and supports her children. Evidently the Badagas have much to learn in the matter of purity and stability of domestic life.

If any member of a Badaga family dies, the corpse is kept in the house for three days. A big car is prepared and the relatives of the dead person come from various villages with trumpets and band. Some of these people dance round the car uttering mournful cries at repeated intervals. All the implements and tools of the dead person, such as mattocks, pick-axes and even utensils are burnt along with the corpse, which is cremated on the third day.

The Badagas are on the whole a lovable people. They are not ferocious or dangerous to their neighbours. By nature they are very meek and submissive. But, the advent of the lawyers on the hills has made the Badagas a most litigious people. They are a "go-ahead" people with plenty of energy. There are also many philanthropists among them who do good to the whole community. They are advancing rapidly in civilisation, in education and even in political consciousness ; and let us hope that before long they will occupy a respectable place among the communities of India.

Geography and Education

GEOGRAPHY THROUGH GAMES

By

K. S. Venkataraman, B.A. Hons.

Of the very many methods that are being followed in the Educational Field—the Play Method is the best as this is the most suitable one for young boys whose lives are full of natural activities such as running, throwing, kicking, walking, jumping, observing and imitating, competing with another, etc. Play as an instinct came into the world to serve the purpose of Education. Man's highest achievments have been reached in the spirit of play and it is no accident that this has come to be appreciated in Education. When we speak of play spirit in education, therefore, we do not imply any disregard of effort on the part of the child but we mean that it is a method of enlisting the joyous and spontaneous activity of the child in the process of education in such a manner that, even when the child is engaged in hard and strenuous work, he feels very little of that external constraint that is so common in the older type of education. Play way or play spirit in education, therefore, means education from the point of view of the spirit of childhood which is just the spirit of joy and spontaneity of play. All modern methods of education, the Montessori Method, the Dalton Plan, the Project Method, the Heuristic Method, etc., embody this play spirit. Play directly prepares the child for the life before him.

Games are but forms of organised play and it is through them much can be taught. Games can be brought into the teaching of any subject, more so in the teaching of Geography which is a subject that is connected with our everyday life. Geography can be taught first-hand through games. Group games and competitive games are very useful in making Geography lessons more interesting and these will magically convert the uninterested into keen students and the unintelligent into models of wisdom. Further, this will relieve the taught and the teacher of a great deal of burdensome and heart-breaking drudgery.

In the teaching of Geography, Maps are essential ; and they form a chief aid to the Geographer. They are the short-hand of Geography and a Geography lesson without the aid of Maps is no lesson at all. Maps should be read and correlat-

ed with actual conditions. They are the chief means of learning Geography; pupils should be introduced to them early, and taught to intrepret them. They should be told as to how to prepare a map and this can be done in the beginning by making them prepare a map of their class-room, and then school-compound, and so on. A pre-requisite for map study is an idea of direction. This is learnt in the primary school as part of Nature Study; but the simplest and oldest method of fixing the direction is by observing the sunrise and the sunset. The idea of compass and how to use it must be explained to the pupils. After the points of the compass are known, maps may be studied and the best method will be to make the pupils prepare maps of their own home-region beginning with the school. An idea of direction, the compass and its use—map synthesis—etc., can all be taught through the following games:—

INDOOR GAMES

First stage 1. *Observation game* (a) Children are made to observe the class-room and after a given time—say 2 or 3 minutes, are asked to enumerate the objects around them. Credit should be given to those children who are able to tell the teacher all the things in the class-room.

(b) Ask the children, where each of the objects is placed. In this way the cardinal points (North, South, East and West) can be located by the pupils. The ordinary method of finding the directions in relation to the position of Sun-rise and Sun-set may be indicated to the pupils. A compass should be shown to the class; and the children should be taught to use the compass. The teacher may draw on the Black-Board a figure of the compass showing the directions.

After this—a game may be set to the children that the next day when they come to school they should be able to tell the master the directions they followed in coming to school. Marks should be awarded to those who do it correctly. (A separate score-sheet may be maintained for marking; and the same may be hung in the class room to stimulate the boys and lead to healthy competition).

Second Stage: *Compass Game.*—Mark out a circle on the ground, and the eight points of the compass on it, the north being marked with arrow head. Place a boy at each point and one "out." The teacher calls two points-say North and South-East,

At once the boys at those two points change places before the boy who is " out " can reach one of the points. For this game only nine are required. If more are to be put into play, a number of circles may be drawn, and this game played. This game easily helps the children to understand the use of the compass in finding the directions.

OUT-DOOR GAMES

A variation of the observation game : (1) Boys may be taken out on an excursion to the local market or to a factory and after return be asked to write an account of all they had seen. The teacher should award marks and enter the same in the record sheet maintained for the purpose.

(2) Take the boys out to a field or to a place near the School and ask them to get a specimen of plants or leaves ; and this will enable them to understand the names of plants and the vegetation of the home region. Whoever brings in the largest collection, gets the highest marks. For this game the pupils may be divided into teams of six.

(3) Stamp collection at home and cuttings from pictorial journals and weeklies may be encouraged. At the end of the month these are exhibited to the whole class and credit is given to that pupil who has numerous and rare collections. Through this the collective instinct is encouraged, and a knowledge of the outside world obtained.

(4) Taking the children to a shop and making them see the articles exhibited and getting them to make a note of the same will lead them to understand the world around them better.

(5) A knowledge of the birds and animals can be easily given by instructing the pupils to observe them, and imitate their movements and cries. Home Geography may thus be made real and interesting.

Heights and Distances (1) Children ought to be told to measure their paces. After finding this out each pupil should be asked to count the number of paces walked from home to school and record the same in a note book. This is to be corrected by the teacher and marked in the score sheet.

(2) If pupils are divided into teams they may be asked to judge distances from a set of places to another set, and the results may be compared. The team which judges correctly wins the game.

(3) Guessing heights by methods learnt in the mathematics class may be used; and the boys may be asked to judge the height of the roofing of the class-room etc.

Third Stage.—After learning the above, the teams may be asked to prepare maps of the class-room and the objects in the room. (Boys may be told to use symbols—and write the key of the map to enable others to understand the same).

Boys individually or in teams may be asked to draw sketch-maps showing the route from home to school. That team gets the highest mark which does it correctly.

After the boys are sufficiently grown up to go in groups and return without the help of the teacher, they may be divided into groups and the following game may be played.

The teacher gives instructions to a particular team as to the route to be followed, things to be observed and information to be collected. (These instructions are to be given secretly in a sealed cover ; and the captain of the team should open the sealed cover after going to a particular distance).

The team starts on its journey and carries out the instructions carefully and after returning, prepares a map and gives it to the teacher, who in turn gives the same to the other teams ; and the latter are to interpret the whole thing. If the teams are able to do it correctly, they get good credit and also the opportunity to go out the next time and do as the first team did.

The teacher's instructions to the team may be as follows :—Go 50 yards north (keep a road sense and observe the things seen on the way). Proceed East-North-East till you come across a bus stand, enquire about the number of buses that ply from there, where they go to etc. Turn to south, and travel 100 yards till you reach a small village with hamlets and count the number of houses there. From the people find out the way back to the school. After returning draw a sketch map, showing the route taken and things observed along with distances. (Always keep together and obey the leader). (This can be varied in a variety of ways to suit the conditions of the school).

MAP FILLING GAME IN THE CLASS ROOM OR BLACK BOARD RELAY

The class may be divided into 2 teams and they are kept separate. 2 black-boards are placed with outlines of maps of countries required for a lesson already done in the class. A piece of chalk

is given to each captain. The teacher reads out a question and immediately the captain or one of the players of his team goes to the B. B. and marks on the map the required answer and comes back to his team and hands over the piece of chalk to the next member. Immediately another question is put and the 2nd boy rushes to the board and marks the details asked. Thus a series of questions may be put and each member of the class learns to mark on the map the details required ; and that team wins which finishes quickly and correctly. A question that involves a little thinking may also be put to the pupils and the answers elicited by making the pupils themselves plot the same on the maps.

This game may be varied by dividing the pupils into different sections to survey a given area.

Each section may contain two or three pupils and they may be asked to study the position, climate, vegetation, communications, transport and trade, and population of a particular area and they may be asked to prepare maps for the same. After the maps are prepared, they may be compared and corrected. To stimulate further work the teams may be given marks for their work.

Many lessons may be taught by the group competitive method which gives an incentive and an opportunity for pupils to work in teams and learn practically a good deal of geography in a pleasant and effective way.

News and Notes

This issue of the Journal closes the transitional year of 9 months; and, as already notified, the Association year and the Journal year will henceforth coincide with the calendar year. The four numbers of the Journal will, however, be published hereafter for each quarter in March, June, September and December, and *not* in January, April, July and October as hitherto.

* * *

There were two meetings of the Association held during the quarter. In the first one, which was held on 12-11-'37 with Mr. B. Clutterbuck as Chairman, Miss C. Eipe, M.A., of St. Christopher Training College gave a lecture on her Impressions of New Zealand, where she was resident for two years. The talk was preceded by a reel on New Zealand, which illustrated in a very realistic manner all the salient features of the geography of that fascinating island in the far-off southern seas.

* * *

In the second meeting, which was held on 27-11-'37 under the Chairmanship of Mr. B. M. Thirunaranan, Mr. S. W. Savarimuthu, B.A., L.T., spoke on his Experiences and Impressions of the Far East. He gave a vivid account of the condition of South China at the time of his visit, and narrated his experiences in Manila and the Dutch East Indies, stressing everywhere the life and conditions of the people and the pulsation of a new spirit that was generally in evidence in all these eastern lands.

* * *

The Working Council of the Association appointed a committee to revise the Rules of the Association; and the draft prepared by it was discussed and approved with a few modifications. They are appended to this issue in their final form as approved by the General Body. Members will note the change in the Constitution that has been brought about with effect from this year.

* * *

The next Summer School of Geography will be conducted at Bangalore in April 1938; and details about the course will be notified duly. Teachers wishing to attend the course may apply to the Secretary for further information and for reservation of seats.

* * *

Arrangements are in progress for holding the next Geographical Conference at Mangalore in May 1938, when following the precedent of previous Conferences, papers on various aspects of the Geography of the District of South Kanara will be read by specialists. Members and others willing to contribute papers for the Conference are requested to inform the Secretary about it at an early date.

* * *

On the request of several members, it is proposed to organise an excursion to Cashmere during the ensuing Summer Vacation after the Mangalore Conference is over. The tour is expected to last from about a month to six weeks; and the probable expenses will be from about Rs. 125 to 175 by third class railway journey. The minimum required for making a party is 17; and beyond that number multiples of 17 persons will be required for the party, as that is understood to be the bus capacity in Cashmere. Details are being worked out and will be ready shortly. Names are being provisionally registered by the Secretary; and preference will be given according to priority of application. Full details will be available about the middle of March, when the tentative registrations will be confirmed on payment of the prescribed advance.

* * *

Though the University of Madras started the question of the place of Geography in it as early as October 1920 by accepting Prof. Gilbert Slater's motion that the subject should be included for study in the University course, and though that University has done all it could do under the Act by passing regulations for teaching the subject in the Intermediate and B.A. stages and by instituting the Diploma Course in the subject, no constituent or affiliated College has provided for its teaching at the B.A. stage, and only 2 women's colleges (and till recently only one) have got it at the Intermediate stage. Hence, the Training Colleges have been forced to continue the farce of training in the pedagogy of the subject students who are not qualified in the subject-matter, which is not the case with regard to any other subject. Consequently, in spite of all that has been done so far, there is still a general complaint that the teaching of Geography in schools has not been quite satisfactory.

* * *

Now that the L.T. Syllabus in Geography is under revision, it is highly desirable that this opportunity is taken to raise the standard by insisting upon the prospective students for the L.T. course, possessing a minimum preliminary qualification in the shape of the

Diploma in Geography, or even the Intermediate Geography. By adopting this measure, even though there may be one or two lean years in the strength of the Geography sections of the Training Colleges, there is no doubt that it will eventually lead to a general improvement in the qualification of the Geography teacher, which cannot be otherwise reached at all, until Colleges provide Degree courses in the subject. Teachers of Geography will then think it worth their while to take the Diploma before seeking admission into Training Colleges. In the best interests of the subject, such a salutary regulation as is proposed above is urgently needed and is hoped will be found acceptable.

* * *

It is, however, gratifying to read from the Examiner's Report of 1937 the remarks regarding the answers in the Geography paper of the S. S. L. C. candidates, that there has been a steady improvement in the quality of the answers and the marks scored by the candidates in the public examination. This shows that the efforts of the Training Colleges and the Summer Schools of the Association for pulling up the teaching of the subject have not been in vain.

* * *

But the teacher of Geography cannot get the credit where he deserves it as also the blame for his neglect, as the marks for History and Geography are not shown in the marks-book separately, but as a single total. It will tend to a greater sense of responsibility and to consequent greater effort on the part of both the History and Geography teachers, if the S. S. L. C. Board will arrange to show first the two marks separately before giving it as a single total. And this can easily be done by a simple order, and would involve no great extra work on the part of the tabulators.

* * *

The Geography and Geodesy Section of the Indian Science Congress, which was created as a separate section for the Silver Jubilee Session at Calcutta had 21 papers contributed for that session as against 3 Geography papers in the previous year at the joint section of Geology and Geography. It is pleasing to note that 11 out of 21 papers are from the members of the Madras Geographical Association. It is hoped that this section, though created for this session only, will be retained as a permanent one, in view of the great importance of the subject and the urgent need there is for a good deal of research in it to make up for past neglect.

Reviews

A Geographical Analysis of the Lower Indus Basin (Sind) : Part II Natural Vegetation, Irrigation and Agriculture. Part III Climatic Conditions in Sind. By Maneck B. Pithawala, Professor of Geology, N. E. D. Engineering College, Karachi, 1937.

These are continuation volumes of the author's 1st part of the work reviewed in the previous number of the Journal, and form with it a valuable series of original regional research carried out for any part of India. Part II deals with Natural Vegetation, Irrigation and Agriculture. Under Vegetation are considered the controlling soil types and climatic conditions, the peculiarities of vegetation as well as their belts of distribution with the corresponding animal life inhabiting them and lastly the economic, medicinal and other uses of the chief varieties of plants growing in the region.

After explaining the dependence of the system of irrigation on Geology, the author makes a historical survey of it from ancient times and after the British advent, both before and after the construction of the barrage, and gives an account of the barrage and its canals.

The first two sections lead naturally to that on Agriculture under which are discussed the defects of the old system of agriculture, the seasons of cultivation, the products of agriculture, stock-farming, crop failure and famines, pre-barrage crop conditions, barrage improvements, irrigation systems in the non-barrage area and redistribution of crops under the new regime. The listing above shows the comprehensive and systematic way the subject has been treated.

The volume is illustrated with 6 carefully prepared maps, which show the hydrography and the barrage system, the natural regions and the vegetation zones, kharif and rabi cultivation and communications.

Part III deals with the climatic conditions in Sind, and is the reprint of a contribution to the 1937 Session of the Indian Science Congress at Hyderabad. After stating in the introduction the chief features affecting the climate of Sind, the author first discusses the seasonal climatic conditions of India affecting Sind under the heads of Monsoons, other external causes and local storms. In the next section the climatic sub-divisions and the seasons are discussed,

and the chief climatic factors and elements are analysed in detail under temperature, pressure, relative humidity (including frost and cloudiness), wind system and rainfall, The array of facts and figures given in this connection bespeak the great labour and thought bestowed on the work. Before closing up with a summary, two short sections discuss the cyclic period in Sind and the climatic change in historical times. Useful appendices giving general weather conditions in Sind, temperature, pressure, humidity and rainfall normals for typical stations, comparison of rainfall figures at Karachi and Kohistan for 27 years, a full bibliography and a series of climatic maps and graphs—show the thoroughness with which this pioneering regional study has been carried out.

Climatic Effects on Life in Sind. By Maneck B. Pithawala, 1937.

This is a radio talk given at the 1937 Diwali Swadeshi Exhibition at Karachi, in which the author, who has made considerable researches on the subject, has presented some simple aspects of it in a pleasant and popular way so as to interest the ordinary citizen. The talk is an illustration of the principle that it takes the master of a subject to present a difficult or technical topic to an ignoramus in it in an elementary way.

Food, Clothing and Shelter : Book III—Growers and Distributors. Book IV—Manufacturers and Explorers. By L. McD Robison. (Macmillan & Co., Ltd., Madras etc.) 1937. Price Re. 1 each.

In reviewing the first two books in the two previous numbers of the Journal, it has been shown that this series, written from the point of view of teachers and pupils living in the tropics, aims to give geographical training to pupils in primary classes for later application to problems of ordinary life. Throughout, the treatment is descriptive and concrete ; and facts given under part A dealing exclusively with Ceylon are tested in part B in their universal application.

The third book on Growers and Distributors deals in the earlier chapters with the chief crops of the Homeland (Ceylon), namely, paddy, cocoanut and tea—their growers and areas of cultivation. The later chapters deal with the Geography of the other lands, near and far, which produce and send their articles to Ceylon. In the three closing chapters, trade and transport are treated in a simple way.

The 4th book—Manufacturers and Explorers—deals about Seasons in relation to Farming, and then about the large scale farmers, the raw materials and manufacturers, explorations and trade routes, and closes up with chapters on natural features in relation to human life and distribution of population.

The treatment in both the books is very simple, interesting and instructive, following a carefully worked out plan according to which the geography of the homeland and of the other lands are correlated in a clever manner. Big bold type and numerous choice pictures, maps and diagrams make these books attractive and useful to children. The series can be used with advantage in South Indian schools by adapting and translation.

Food, Clothing and Shelter: *Teacher's Books III & IV. By* L. McD Robison. (Macmillan & Co., Ltd. Madras etc.). 1937. Price 8 as. each.

As in the earlier two books of this series, the first six chapters, covering nearly half the book, contain general discussions on the teaching of geography, presented in a simple manner so as to be useful to the lower school teacher, who is not a specialist in the subject. The later chapters explain the method of handling the subject-matter in the several chapters of the pupils' books. The two parts together afford valuable guidance in a detailed manner.

An Atlas of Indian History: By E. W. Green. (Macmillan & Co. Ltd.). 1937.

Mr. Green, who was a well-known Professor of History in Madras Colleges, has done a good service to students of Indian History by producing this useful atlas, which possesses distinctive features of its own. It attempts to give a connected representation of Indian History by making the maps illustrate not isolated stages or special events as is usually done but periods, or as the author puts it, "they represent the road, not merely the milestones upon it." The maps illustrate again the main geographic features that have influenced the course of Indian History. They further indicate the extent and importance of India's external relations, emphasizing the fact that India has never remained in insolation, but has always been linked up in a great chain of countries. From the dawn of history circa 6000 B.C. to 1930 A.D. the History of India is illustrated in the Atlas by means of 20 maps, each of which is supple-

mented by succint notes on the opposite page. We would strongly recommend the use of this Atlas in schools and colleges.

Prapancha Parichaya. By D. Narasimhan. (Sriramachandra Book Depot, Mysore). Revised edition: 1937. Price as. 6.

This elementary text book of geography contains easy lessons dealing with a wide range of topics from human needs and commodities of everyday life to accounts of interesting places in our own and other lands. It is well written in simple Canarese with a due emphsis on the geographical aspect of ordinary things. The plan, however, seems to be mixed up and somewhat ambitious, and requires a greater stress on the regional background. Still, the book is certainly superior to the ordinary type of books in use in schools, and forms a good introduction to the systematic study of geography. The vividness of narration is calculated to rouse the interest of the pupils. The volume is attractively got up with copious illustrations and good print and paper.

Chennapattanam: (Geography of Madras City in Tamil). By N. Subrahmanyam. (Longmans, Green & Co. Ltd. Madras). 1937. Price as. 6.

This is an elementary geography of Madras City meant for the use of pupils in the primary classes in the city schools. Instead of the systematic treatment according to a logical type plan which has unfortunately been in vogue in South India, a new line has been struck of treating the different parts of the city in a descriptive way, bringing out their salient features in simple Tamil. A chapter on Greater Madras, which is often neglected and four general lessons—on the Seasons in Madras, How the City gets its Supplies, Transport in the City, and Stages in the Growth of the City—round off this interesting little book, written on refreshingly new lines. The bold type on glazed paper; the choice pictures and the neat get-up make it attractive to children.

Books and Journals Received

A Geographical Analysis of the Lower Indus Basin (Sind): Part II—Natural Vegetation, Irrigation, and Agriculture; and Part III—Climatic Conditions in Sind. By Maneck B. Pithawala.

Climatic Effects on Life in Sind: By Maneck B. Pithawala.

Food, Clothing and Shelter: Book III—Growers and Distributors; and Book IV—Manufacturers and Explorers. And Teacher's Books III and IV. By L. McD. Robinson.

Prapancha Parichaya (Lessons in Modern Geography in Canarese). By D. Narasimhan.

Geography of Madras City (in Tamil). By N. Subrahmanyam.

An Atlas of Indian History. By E. W. Green.

Report on Operations of the Department of Agriculture, Madras Presidency for the year 1936-37.

The Geographical Magazine: November and December 1937.

Kalaimagal: November and December 1937.

Educational India: November and December 1937.

The Geographical Journal: November and December 1937.

Brahma Vidya—The Adyar Library Bulletin: December 1937.

The Scottish Geographical Magazine: November 1937.

The Indian Educator: November and December 1937.

The South Indian Teacher: November and December 1937.

Indian Culture: October 1937.

The Educational Review: November and December 1937.

Geography: December 1937.

Calcutta Geographical Review: September 1937.

Hungarian Geographical Review: Vol. LXV—Nos. 4, 5, 6 and 7 for 1937.

Mitteilungen der Geographischen Gesellschaft in Hamburg: Bd. XLV-1937.

Akademiya Navk—U.S.S.R.: Trudi Instituta Geografi: Book 25—1937.

JOURNAL OF THE MADRAS GEOGRAPHICAL ASSOCIATION

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THE TWELFTH ANNUAL REPORT OF THE MADRAS GEOGRAPHICAL ASSOCIATION, 1937

(1st April to 31st December).

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THE TWELFTH ANNUAL REPORT OF THE MADRAS GEOGRAPHICAL ASSOCIATION, 1937.

The Working Council of the Madras Geographical Association has the honour to present the following Report for the period from 1st April to 31st December 1937 :—

In accordance with the resolution of the General Body at its last meeting, the Association year of 1937 was a transitional one of 9 months only from 1st April to 31st December 1937, though there were as usual four issues of the Journal as well as of the Bulletin during the period. From 1st January 1938 the Association year, and consequently the Journal year, will coincide with the calendar year.

Strength.—The strength of the Association at the commencement of the year was 172 as against 188 at the commencement of the previous year. During the year 1 member passed away, 3 members resigned and 27 members were removed from the list for non-payment of arrears of subscription. 24 new members were enrolled during the year. The strength of the Association on 31-12-37, therefore, stood at 165, including 9 life members of whom one was admitted during the year.

The Journal had 150 subscribers as against 162 in the previous year. Of these, 85 are official subscribers as in the previous year. These figures show that there has been a slight fall of 7 in the total strength of the Association and of 12 subscribers to the Journal from among the members.

Financial position.—The financial position of the Association can be seen from Appendix B, which shows that the total subscription for the year is Rs. 1,274-0-0, of which Rs. 634-5-0 or nearly one-half remains outstanding to be collected, Rs. 105 from members and Rs. 529-5-0 from institutions. This large amount due from institutions is explained by the fact that usually their payments are received in the fourth quarter of the year ending 31st March, and that last year was a transitional one of three quarters or 9 months only. The institutional subscriptions due for last year (1937) are expected to be received in the course of this quarter. As a matter of fact, an amount of Rs. 283 due for last year has since been received

The Association Fund stood at Rs. 87-2-6 at the beginning of the year, to which has been added the surplus of Rs. 233-9-8 during the year as shown by the Income and Expenditure Account; and this brings up the balance to Rs. 320-12-2. The total of the Association, Research and Capital Funds at the end of the year amounted to Rs. 626-12-2.

The Working Council met thrice during the year; and urgent business was transacted by circulation.

A list of the ordinary meetings of the Association is given in Appendix A. As the year has been a short one of 9 months only, of which 3 months were taken up by the summer vacation, the number of meetings was fewer than usual.

The Coimbatore branch of the Association is the only one that continues to exist, and has shown some activity during the year.

The Seventh Summer School of Geography was conducted at the Teachers' College, Saidapet during April 1937. It was attended by 22 teachers (including 2 ladies). A detailed report of it was published in the issue of the Journal for April 1937 (Vol. XII, No. 1). The Working Council feels specially indebted to the following lecturers, who did honorary work in the Summer School, and conveys to them once more its grateful thanks:—Mr. S. Balakrishna Ayyar, Mr. George Kuriyan, Mr. B. M. Thirunaranan, Miss Mary W. F. Waddington, Mr. S. Muthukrishna Ayyar, Mr. P. G. Dowie, Mr. K. Srinivasaraghavan and Mr. N. Subrahmanyam.

The Seventh Geographical Conference of the Association was held at Tanjore on the 6th, 7th and 8th May 1937 under the Presidency of M.R.Ry. Rao Bahadur C. M. Ramachandra Chettiyar, B.A., B.L., F.R.G.S., of Coimbatore. The Proceedings of the Conference along with the Presidential Address and the papers read have been published in Volume XII, Nos. 2 and 3 of the Journal of the Association for July and October 1937.

The Association has lived for 12 years; and this period has been one of varied and useful activities, though it has had to labour under increasing financial difficulties, due largely to inadequate local appreciation and support. The Journal has filled a gap, serving as a clearing house of geographic thought and endeavour in South India, and has been having wide international exchanges.

The Working Council appointed a committee to prepare a revised body of rules, adapting the existing ones to suit the altered

circumstances. These rules have been discussed and approved by it, and will be submitted to the General Body along with the Annual Report for its approval. (Appendix C.)

The Madras Geographical Association was represented by a dozen members at the Geography and Geodesy Section of the Silver Jubilee Session of the Indian Science Congress at Calcutta; and a proposition was put forward there, supported by the Geographers in the British Delegation, to organise a federation of the Geographical Associations in India. This scheme, which will be discussed and worked out in the course of this year by the Committee appointed for the purpose, merits the whole-hearted support of the Madras Geographical Association.

Gopalapuram, Cathedral Post, (By Order)

Madras, 25th January 1938. N. SUBRAHMANYAM,

Secretary.

APPENDIX A.

List of Meetings of the Association in 1937.

Date.	*Subject.*	*Lecturer.*	*Chairman.*
23—8—37	Modern Conurbations.	Mr. S. Muthukrishnan.	Miss M. W. F. Waddington.
7—9—37	From London to Bombay in a Morris Eight.	Mr. F. J. H. Grattan.	
12-11-37	My Impressions of New Zealand.	Miss C. Eipe.	Mr. B. Clutterbuck.
27-11-37	My Impressions of the Far East.	Mr. S. W. Savarimuthu	Mr. B. M. Thirunaranan.

APPENDIX B.

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS

Statement of Receipts and Disbursements for the period of nine months, ending 31st December, 1937.

RECEIPTS.	Rs.	A.	P.	DISBURSEMENTS.	Rs.	A.	P.
OPENING BALANCES :				DISBURSEMENTS :			
Balance to be remitted.	56	0	0	Journal Expenses ..	692	11	0
Do. with Indian Bank, Ltd. ..	98	2	11	Summer School Expenses ..	202	8	0
Do. of Imprest A/c. ..	16	10	1	Postage & Telegrams ..	102	15	0
				Rent of Office ..	135	0	0
RECEIPTS :				Clerk & Peon ..	70	0	0
Subscriptions—				Stationery ..	4	13	6
Life Membership ..	100	0	0	Cycle repairs, etc. ..	3	10	6
Ord. Membership ..	194	0	0	Honorarium to auditor.	20	0	0
The Journal ..	336	11	0	Maps & Equipment ..	24	4	0
Advt. in Journal ..	27	0	0	Donation for Education Week ..	3	0	0
Sale of Journal, etc. ..	49	1	0	Conveyance, cooly, bank commission & meetings, etc. ..	6	6	0
Postal & other charges recovered ..	3	7	7				
Interest from Bank ..	1	1	1	CLOSING BALANCES :			
Advance from Secretary ..	400	0	0	Balance to be remitted.	44	0	0
Summer School Fees ..	70	0	0	Do. with Indian Bank, Ltd. on S. B. A/c. ..	40	3	7
				Do. of Imprest A/c. ..	2	1	7
				Do. of Postage A/c. ..	0	8	6
Total ..	1,352	1	8	Total ..	1,352	1	8

Income and Expenditure account for the period of nine months, ending 31st December, 1937.

EXPENDITURE.	Rs.	A.	P.	INCOME.	Rs.	A.	P.
To Journal Expenses ..	792	11	0	By Subscriptions received & outstanding :			
„ Postage & Telegrams.	102	15	0	Life Membership ..	100	0	0
„ Stationery ..	4	13	6	Ord. Membership ..	290	0	0
„ Rent of Office ..	135	0	0	The Journal ..	884	0	0
„ Clerk and Peon ..	70	0	0		1,274	0	0
„ Cycle repairs, etc. ..	3	10	6	„ Sale of copies of Journal, etc. ..	49	1	0
„ Honorarium to auditor.	20	0	0	„ Advts. in Journal ..	27	0	0
„ Donation for Education Week ..	3	0	0	„ Postal & other charges recovered ..	3	7	7
„ Conveyance, cooly, bank commission, meetings, etc. ..	6	6	0	„ Interest from Bank ..	1	1	1
„ Summer School Expenses ..	202	8	0	„ Summer School fees.	220	0	0
„ Surplus (to Balance Sheet) ..	233	9	8				
Total ..	1,574	9	8	Total ..	1,574	9	8

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS

Balance Sheet as at 31st December, 1937.

Liabilities.	Rs. A. P.	Rs. A. P.	Rs. A. P.
LIABILITIES FOR :			
Advance Subscription			
(Ordy. Membership) ..		1 0 0	
Journal Expenses			
(approximate) ..		400 0 0	
Advance by Secretary ..		400 0 0	
			801 0 0
FUNDS OF ASSOCIATION :			
Capital Fund ..		300 0 0	
Research Fund ..		6 0 0	
Association Fund : Balance			
as per last B. Sheet ..	87 2 6		
Add surplus since Do. ..	233 9 8		
		626 12 2	
			626 12 2
Total ..			1,427 12 2

Assets.	Rs. A. P.	Rs. A. P.	Rs. A. P.
FURNITURE (at cost) ..			120 13 0
CYCLE (at cost) ..			45 0 0
BOOKS; MAPS & EQUIPMENT			
(at cost) ..			256 12 6
SUBSCRIPTIONS OUTSTANDING :			
Life Membership ..		75 0 0	
Ordinary Membership—			
for 1935-36 ..	1 0 0		
1936-37 ..	23 0 0		
1937 ..	164 0 0		
		188 0 0	
The Journal—			
for 1935-36 ..	8 0 0		
1936-37 ..	13 0 0		
1937 ..	634 5 0	655 5 0	
			918 3 0
CASH & OTHER BALANCES :			
Balance to be remitted ..		44 0 0	
Do. on S.B. A/c. with Indian Bank, Ltd., Madras ..		40 3 7	
Do. of Imprest A/c. ..		2 1 7	
Do. of Postage A/c. ..		0 8 6	
			86 13 8
Total ..			1,427 12 2

NOTE :—Press due of Rs. 400 shown above is only approximate, as the bill from the Press is not available. No depreciation on assets is charged.

N. SUBRAHMANYAM, *Secretary.*

J. M. GERRARD, *President.*

K. SRINIVASARAGHAVAN, *Treasurer.*

Report by Auditor.—Checked the accounts of the above Association and prepared the above Balance Sheet, etc., which in my opinion are correct according to the books, etc., maintained and produced, and explanation given.

Dated : 16th January 1938.

G. L. NARASIMHAM,
Registered Accountant, Auditor.

APPENDIX C.

THE MADRAS GEOGRAPHICAL ASSOCIATION, MADRAS

Rules.

1. The name of the Association shall be *The Madras Geographical Association.*

Objects.

2. The objects of the Association shall be :—
   (a) To promote and diffuse geographical knowledge;
   (b) To secure for geography its proper place in schools, colleges and universities;
   (c) To help to improve the methods of teaching geography;
   (d) To help geographical studies about India.

3. These objects shall be secured by :—
   (a) Holding meetings and conferences;
   (b) Publishing a Journal and other occasional publications;
   (c) Organizing geographical exhibitions and excursions;
   (d) Helping in the preparation of geography books in the languages current in India;
   (e) Forming a central library of geographical literature, and collecting maps, charts, plans, models, slides and instruments;
   (f) Providing for circulation to members of books, periodicals, and other collections;
   (g) And by such other ways as are deemed necessary to promote the objects of the Association.

Membership.

4. The membership of the Association shall be open to all those who are interested in the promotion of geographical knowledge.

5. There shall be two classes of members, full and associate.

6. Full members may be honorary, life or ordinary.

7. Honorary members are those who shall be so elected by the Council by two-thirds of its total strength by the majority thereof. They shall be exempt from liability to pay any subscription, and shall have all the privileges of ordinary members, except voting.

8. Those who pay an amount of one hundred rupees in one instalment or Rs. 120 within a period of 24 months may be elected

life members by the Council ; and they shall be exempt from payment of any further subscriptions.

9. A person shall become an ordinary member or an associate member upon the proposal by a full member, the seconding by another full member and approval by the Executive Committee by the majority thereof present at its meeting.

10. An ordinary member shall pay an entrance fee of rupees two along with his application for membership and an annual subscription of rupees six.

11. Associate members shall be exempt from any entrance fee ; and they shall pay an annual subscription of rupees two.

12. Ordinary and life members shall be entitled to all the privileges of the Association, including the right to vote and to receive the Journal free of all cost.

13. Associates shall be entitled (*i*) to attend all lectures, meetings, conferences, exhibitions and excursions, (*ii*) to use the library, and (*iii*) to receive the periodical bulletins, called *News and Notes*. They are not entitled to vote.

14. The annual meeting of the Council shall be held in January, not less than three weeks before the annual meeting of the Association.

15. Individual subscriptions fall due on the 1st January of each year and are payable within the first quarter of the year.

Office-bearers.

16. There shall be the following office-bearers :—(1) a president, not more than three vice-presidents, a secretary, an assistant secretary and a treasurer, elected by the general body before its annual meeting ; and (2) an editor elected by the Council. They shall hold office for one year, and shall be eligible for re-election.

Management.

17. For the management and conduct of the affairs of the Association there shall be a Council and an Executive Committee.

18. The Council shall consist of the office-bearers, the other members of the Executive Committee, six others to be elected annually by the General Body, and one representative elected annually by each of the branches. The quorum for the Council shall be five. It shall meet at least once a year.

19. The Executive Committee shall consist of the President, the Secretary, the Assistant Secretary, the Treasurer, the Editor, one member elected annually by the General Body, and one mem-

ber elected annually by the Council from among itself. The quorum for a meeting of the Executive Committee shall be three. It shall meet at least once a quarter.

20. The management of the Association shall vest in the Council. It shall form an advisory body to the Executive Committee, which shall conduct the work of the Association

21. The powers and duties of the Council shall be :—

(i) To submit the annual report to the General Body at its annual meeting ;

(ii) To elect life members and honorary members of the Association and an Editor ;

(iii) To provide for the custody and administration of the funds and other property of the Association ;

(iv) To act in all respects on behalf of and with the powers of the General Body, except when it is actually sitting.

22. The Council shall have the powers, subject to the veto of the General Body, to issue, modify or rescind rules and bye-laws for the regulation of the work and activities of the Association.

23. The powers and duties of the Executive Committee shall be : —

(i) To elect ordinary and associate members ;

(ii) To arrange for meetings, conferences, exhibitions, excursions, etc. ;

(iii) To appoint committees and assign duties to them.

Miscellaneous.

24. The official year of the Association shall be from 1st January to 31st December.

25. The annual meeting of the Association shall be held in February when the results of the election for the year will be announced and the annual report presented.

26. Members in arrears of subscription shall not be entitled to vote or to hold office. Their names shall be removed from the list, if the period of arrears extends over one year.

Branches of the Association.

27. The objects of the branches shall be to increase the activities of the Association by promoting local studies and by arranging local meetings, excursions, etc., in accordance with Rules 2 and 3 of the Association.

28. The Council may, on an application made by them, constitute a branch of the Madras Geographical Association in any area where there are not less than ten members.

29. The members of the branch so constituted shall elect from among themselves a local secretary who will conduct the business of the branch and such other office-bearers as they elect to have.

30. The branch shall elect annually in January its representative for the year on the Council of the Association.

31. The local secretary shall collect and remit the subscription of the members in his locality from time to time, and receive and distribute or circulate reports, leaflets, circulars, etc., to the members of the branch.

32. Out of the annual subscription collected from the members of the branch area, the branch will be entitled to retain one rupee per annum for each member.

33. The branch will also be entitled to receive one rupee per annum for each life member of the Association who is also a member of that branch.

34. The local secretary shall submit to the secretary of the Association early in January a regular account of receipts and expenses for the previous year.

35. A free copy of the Journal of the Association shall be sent to each branch.

36. All publications received by the local secretary shall be added to the branch library.

37. The local secretary shall be in charge of the branch library and arrange to lend the Journals, books, etc., to the members.

38. When the membership in a local branch falls below ten at any time, the local secretary shall try to enlist new members and make up the minimum number by the end of the year. Otherwise, the branch shall be dissolved and its collection of Journals, etc., as well as the balance of funds and other property shall be taken over by the Association.

39. The local secretary can get any books or journals from the library of the Association for the use of the members of the branch for a limited period. The expenses of carriage to and fro shall be met by the branch or individuals concerned, according as the books, etc., are needed for the general use of all the members or for particular members as the case may be.

40. The local Secretary shall send to the Secretary of the Association quarterly reports of the activities of his branch for publication in the Journal and for incorporation in the Annual Report.